

**EPA Superfund  
Record of Decision:**

**WRIGLEY CHARCOAL PLANT  
EPA ID: TND980844781  
OU 01  
WRIGLEY, TN  
09/30/1991**

1) PRIMARY SITE; 2) STORAGE BASIN; 3) IRRIGATION FIELD; AND 4) ATHLETIC FIELD. AT PRESENT, ONLY THE PRIMARY SITE AND THE STORAGE BASIN WERE FOUND TO CONTAIN HAZARDOUS MATERIALS AND SIGNIFICANT CONTAMINATION. ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT.

#### **DESCRIPTION OF THE SELECTED REMEDY**

BASED ON THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) AND SUPPLEMENTAL SAMPLING AND ANALYSIS, THE US EPA HAS IDENTIFIED ALTERNATIVE 3 (AS DESCRIBED IN THE JULY 1991 FEASIBILITY STUDY) AS THE BEST COURSE OF ACTION FOR THE FIRST STEP OF CLEANUP ACTIVITIES TO BE TAKEN AT THE WRIGLEY CHARCOAL SITE. THE MAJOR GOAL OF THESE EARLY FINAL AND INTERIM ACTIVITIES IS TO ADDRESS THE MOST SERIOUS THREATS AT THE WRIGLEY CHARCOAL SITE BY REMOVING OR CONSOLIDATING CONTAMINATED MEDIA AT THE PRIMARY SITE, AND RESTRICTING ACCESS AT THE PRIMARY SITE AND THE STORAGE BASIN. THE INTERIM ACTIVITIES WILL ACHIEVE SIGNIFICANT RISK REDUCTION WHILE A FINAL REMEDIAL SOLUTION IS DEVELOPED. ADDITIONAL GOALS OF THESE EARLY FINAL AND INTERIM ACTIONS ARE DESIGNED TO PREPARE THE WRIGLEY SITE FOR FUTURE REMEDIAL ACTIVITIES.

THE COMPONENTS OF THE EPA SELECTED EARLY FINAL ACTION AND INTERIM ACTION INCLUDE:

1. METALLIC WASTES IN THE MAINTENANCE BUILDINGS' BURN-PIT WILL BE EXCAVATED, TRANSPORTED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED RCRA FACILITY. TRANSFORMERS FOUND IN THE MAINTENANCE BUILDING WILL BE STAGED WITH OTHER TRANSFORMERS FOUND AT THE PRIMARY SITE IN AN ON-SITE CONSOLIDATION AREA;
2. POTENTIAL RISKS THROUGH DERMAL CONTACT WILL BE REDUCED AT THE STORAGE BASIN BY FENCING THE AREA. THIS WILL DISCOURAGE AND POSSIBLY PREVENT ENTRY AND DISTURBANCE OF THIS AREA UNTIL WASTES CAN BE APPROPRIATELY ELIMINATED DURING LATER REMEDIAL ACTIVITIES;
3. PROCESS TANK WASTE SLUDGES WILL BE EXCAVATED, TRANSPORTED, INCINERATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED FACILITY. THE METALLIC TANKS WILL BE DECONTAMINATED, AND SOLD AS SCRAP;
4. BLACK COAL-TAR SLUDGE WASTES ON THE GROUND FROM THE PROCESS TANKS DOWN TO THE NORTH FORK OF MILL CREEK WILL BE EXCAVATED, TRANSPORTED OFF-SITE, INCINERATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED FACILITY;
5. BLACK COAL-TAR SLUDGE WASTES AT THE NORTHEAST CORNER OF THE PREVIOUS STILL HOUSE LOCATION WILL BE EXCAVATED, TRANSPORTED OFF-SITE, INCINERATED, STABILIZED AND DISPOSED IN AN EPA APPROVED FACILITY;
6. FRIABLE ASBESTOS CORRUGATED ROOFING MATERIAL (ACM) WILL BE REMOVED FOR DISPOSAL IN AN APPROVED ASBESTOS LANDFILL. WASTES ARE ON THE SMALL BUILDING IN FRONT OF THE MAINTENANCE BUILDING AND BROKEN ACM ON THE GROUND NEAR THE DRYER BUILDING, MAINTENANCE BUILDING, AREA NEAR THE PREVIOUS LOCATION OF THE STILL HOUSE, AND IN THE OLD TANK BATTERY.

ALSO, ACM CONTAMINATED SOILS ADJACENT TO THESE WASTES WILL BE REMOVED TO AN APPROVED ASBESTOS DISPOSAL FACILITY;

7. EXPOSED BLACK COAL-TAR WASTES IN THE SPILLWAY WILL BE EXCAVATED TRANSPORTED, INCINERATED, STABILIZED AND DISPOSED IN AN EPA APPROVED FACILITY;

8. TWELVE STAGED DRUMS LOCATED NEAR THE MAINTENANCE BUILDING AND TWO DRUMS IN THE STORAGE SHED, WILL BE TRANSPORTED, WITH CONTENTS INCINERATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED FACILITY;
9. THE SPILLWAY WILL BE REPAIRED AND RE-ENGINEERED TO ACCOMMODATE THE SIGNIFICANT FLOOD WATERS THAT FREQUENT THIS AREA. THIS MAY INVOLVE STRAIGHTENING AND FURTHER EXCAVATING THE SPILLWAY DOWN TO THE EXISTING CREEK GRADE;
10. SITE SURFACE WASTE/DEBRIS PILES THAT INCLUDE TAR-CUBES, PIECES OF ACM, TRANSFORMER MATERIALS, CRUSHED DRUMS, AND OTHER MISCELLANEOUS METALLIC DEBRIS AND TAR WASTE WILL BE SORTED. PIECES OF ACM WILL BE DISPOSED OF WITH OTHER ACM PREVIOUSLY DESCRIBED IN ITEM 6. METALLIC SCRAP WILL BE TRANSPORTED OFF-SITE AND DISPOSED IN AN EPA APPROVED FACILITY. (IF DURING THE REMEDIAL DESIGN (RD), IT IS DETERMINED THAT METALS DEBRIS IS TO REMAIN ON-SITE, THIS WASTE WILL BE PLACED IN THE ON-SITE CONSOLIDATION AREA.) MATERIALS SUCH AS TAR-CUBES AND WASTES THAT MAY BE REMEDIATED DURING LATER REMEDIAL ACTIVITIES WILL BE STORED IN AN ON-SITE CONSOLIDATION AREA;
11. A LIMITED INVESTIGATIVE EFFORT WILL BE PERFORMED AT THE IRRIGATION FIELD'S THREE-QUARTER ACRE ABANDONED LAGOON. THIS ACTIVITY WILL INCLUDE A LIMITED NUMBER OF BORINGS/ EXCAVATIONS NEAR THE PREVIOUS LOCATION OF THE FEED PIPE OUTFLOW;
12. EPA WILL NEGOTIATE WITH LOCAL MUNICIPALITIES TO IMPLEMENT DEED RESTRICTIONS. ALSO SITE ACCESS CONTROLS (FENCING & PLACARDS) WILL BE IMPLEMENTED AT THE PRIMARY SITE AND STORAGE BASIN;
13. SAMPLING AND ANALYSES:
  - RESAMPLING OF SIX MONITORING WELLS AND TWELVE PIEZOMETERS AT THE PRIMARY SITE WILL PROVIDE AN ASSESSMENT OF THE GROUNDWATER QUALITY;
  - SOIL SAMPLING AND ANALYSES WILL BE REQUIRED TO ASSESS THE NEED FOR ANY FUTURE REMEDIAL ACTIVITIES BEHIND THE ATHLETIC FIELD TO THE GARDEN AREA;
  - FOLLOWING THE EPA EARLY FINAL AND INTERIM ACTION ACTIVITIES, ONE ROUND OF RESIDENTIAL WELL AND SPRING SAMPLING AND ANALYSES WILL BE REQUIRED TO INSURE THAT WATER QUALITY HAS NOT BEEN AFFECTED.

ACTIVITIES IN ITEMS 1, 3, AND 8 ARE CONSIDERED TO BE EARLY FINAL ACTION ACTIVITIES. BURN-PIT REMEDIATION WILL BE AN EARLY FINAL ACTION (HOWEVER, THE CONSOLIDATION OF TRANSFORMERS IN ACTIVITY 1 IS AN INTERIM ACTION). THIS PIT WILL BE CLEANED UP TO ACCEPTABLE SOIL CONCENTRATIONS (EXCEPT FOR LEAD WHICH WILL BE CLEANED UP TO 1000 PPM), THEN BACKFILLED WITH CLEAN FILL. ELIMINATION OF PROCESS TANK WASTE SLUDGES IS AN EARLY FINAL ACTION. TANK SLUDGES WILL BE REMEDIATED AND WILL MEET CRITERIA PROVIDED ON PAGE 42 OF THIS DOCUMENT. THE PROCESS TANKS WILL BE DECONTAMINATED TO BACKGROUND LEVELS. ELIMINATION OF THE STAGED DRUMS AND CONTAMINANTS IS ALSO AS EARLY FINAL ACTION.

THE EPA ESTIMATES THAT IT WILL TAKE 6 MONTHS TO IMPLEMENT THE RECOMMENDED ALTERNATIVE ONCE THE REMEDIAL DESIGN IS COMPLETE. THESE ACTIONS ARE ESTIMATED TO HAVE A TOTAL PRESENT WORTH COST OF \$984,998.

**STATUTORY DETERMINATIONS: DECLARATION**

THESE EARLY FINAL AND INTERIM ACTIONS ARE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COMPLY WITH FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR THIS LIMITED-SCOPE ACTION, AND ARE COST-EFFECTIVE. PORTIONS OF THIS ACTION ARE INTERIM AND ARE NOT INTENDED TO UTILIZE PERMANENT SOLUTIONS FOR ANY OF THE FOUR WRIGLEY CHARCOAL SITE AREAS. OTHER PORTIONS OF THIS ACTION ARE CONSIDERED TO BE EARLY FINAL ACTIONS AND UTILIZE PERMANENT SOLUTIONS, AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE GIVEN THE LIMITED SCOPE OF THE ACTION.

BECAUSE THIS ACTION DOES NOT CONSTITUTE THE FINAL REMEDY FOR THE WRIGLEY CHARCOAL SITE, THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT WILL BE ADDRESSED BY THE FINAL RESPONSE ACTION. SUBSEQUENT ACTIONS ARE PLANNED TO ADDRESS FULLY THE THREATS POSED BY THE CONDITIONS AT THIS SITE. SINCE THIS ACTION WILL RESULT IN HAZARDOUS SUBSTANCES REMAINING ON-SITE ABOVE HEALTH-BASED LEVELS, A REVIEW WILL BE CONDUCTED WITHIN FIVE YEARS AFTER COMMENCEMENT OF THE REMEDIAL ACTION AS EPA CONTINUES TO DEVELOP FINAL REMEDIAL ALTERNATIVES FOR THE WRIGLEY CHARCOAL SITE. THE REVIEW WILL BE CONDUCTED TO ENSURE THAT THE REMEDY CONTINUES TO PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. BECAUSE THIS IS AN INTERIM ACTION ROD, REVIEW OF THIS SITE AND OF THIS REMEDY WILL BE CONTINUING AS PART OF THE DEVELOPMENT OF THE FINAL REMEDY FOR THE WRIGLEY CHARCOAL SITE.

DATE: 09/30/91

GREER C. TIDWELL  
REGIONAL ADMINISTRATOR

## **#INT**

### **INTRODUCTION**

THE WRIGLEY CHARCOAL SITE WAS INCLUDED ON THE NATIONAL PRIORITIES LIST (NPL) IN MARCH OF 1989 WITH A HAZARD RANKING SCORE (HRS) OF 36.14. THIS HRS SCORE WAS DEVELOPED AFTER EPA'S REGION IV FIELD INVESTIGATION TEAM (FIT) COLLECTED SAMPLES AT THE SITE IN 1986.

APPROXIMATELY 81 ACRES AT THE WRIGLEY CHARCOAL SITE WERE UTILIZED INTERMITTENTLY FROM 1881 TO 1985 FOR A VARIETY OF INDUSTRIAL OPERATIONS. THE MAJORITY OF THESE OPERATIONS CONSISTED OF PIG IRON AND WOOD RETORTING/WOOD DISTILLATION BY-PRODUCT MANUFACTURING. REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) ACTIVITIES WERE INITIATED IN AUGUST 1989 IN RESPONSE TO THE SITE BEING LISTED ON THE NPL. THE RI REPORT WHICH EXAMINES CONTAMINATED MEDIA AT THE FOUR SITE LOCATIONS WAS FINALIZED IN JULY OF 1991. THE FS REPORT WHICH EXAMINES ALTERNATIVES FOR THE EARLY FINAL AND INTERIM ACTION WAS SUBMITTED TO THE PUBLIC INFORMATION REPOSITORY ALSO IN JULY OF 1991. THE FINAL REPORT WILL BECOME PART OF THE FINAL ADMINISTRATIVE RECORD.

THIS INTERIM ACTION RECORD OF DECISION HAS BEEN PREPARED TO SUMMARIZE THE REMEDIAL ALTERNATIVE SELECTION PROCESS AND TO PRESENT THE SELECTED REMEDIAL ALTERNATIVE, IN ACCORDANCE WITH SECTION 113(K)(2)(B)(V) AND SECTION 117(B) OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980 (CERCLA) AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA-P.L. 99-499). THE ADMINISTRATIVE RECORD FILE FOR THE WRIGLEY CHARCOAL SITE FORMS THE BASIS FOR THE RECORD OF DECISION CONTAINED HEREIN.

## **#SNLD**

### **SITE NAME, LOCATION AND DESCRIPTION**

THE WRIGLEY CHARCOAL SUPERFUND SITE (THE "SITE") IS LOCATED APPROXIMATELY 45 MILES SOUTHWEST OF NASHVILLE, TENNESSEE (FIGURES 1-2). BASED ON AVAILABLE DATA, THE SITE CONTAINS FOUR MAJOR AREAS OF CONTAMINATION: THE PRIMARY SITE; THE STORAGE BASIN; THE IRRIGATION FIELD; AND THE ATHLETIC FIELD (FIGURES 3-6). THE PRIMARY SITE IS LOCATED WITHIN A STEEP-WALLED VALLEY WHILE THE STORAGE BASIN IS LOCATED SOUTHWEST OF THE PRIMARY SITE ON TOP OF A PALISADE ADJACENT TO THE NORTH FORK OF MILL CREEK VALLEY. THE IRRIGATION FIELD IS LOCATED ON RELATIVELY FLAT LYING PROPERTY APPROXIMATELY 3/4 MILE NORTHEAST OF THE PRIMARY SITE AND THE ATHLETIC FIELD RESIDES WITHIN THE EAST NEIGHBORHOOD OF WRIGLEY APPROXIMATELY 1/5 MILE EAST OF THE PRIMARY SITE. THE SITE'S FOUR CONTAMINATED AREAS AS DEPICTED IN (FIGURE 2) ARE SUMMARIZED BELOW:

1. PRIMARY SITE (THIRTY-FIVE ACRES REPRESENTS THE EXTENT OF INDUSTRIAL ACTIVITIES IN THE VALLEY);
2. STORAGE BASIN AND OVERFLOW BASIN (THREE ACRES);
3. IRRIGATION FIELD (FORTY ACRES) INCLUDING THE ABANDONED WASTEWATER HOLDING AREA REFERRED TO AS THE LAGOON;
4. ATHLETIC FIELD (ALSO CALLED L.A. MILLER PARK-THREE AND ONE-HALF ACRES).

## **#SHEA**

### **SITE HISTORY AND ENFORCEMENT ACTIVITIES**

#### **HISTORY**

THE PRIMARY SITE (FIGURE 3) WAS USED FOR INDUSTRIAL OPERATIONS SUCH AS PRODUCING IRON, CHARCOAL, AND WOOD DISTILLATION PRODUCTS INTERMITTENTLY FROM 1881 TO 1966. THE BUSINESSES OR INDIVIDUALS INVOLVED IN THE INDUSTRIAL OPERATIONS DURING THIS TIME PERIOD MAY NO LONGER EXIST AND

INVESTIGATIONS ARE CONTINUING TO DETERMINE WHETHER OR NOT THERE ARE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FROM THIS TIME PERIOD TO FUND CLEANUP OPERATIONS. THE SITE WAS PURCHASED IN 1966 BY THE TENNESSEE FARMERS COOPERATIVE (TFC) WHO ARE THE PRESENT OWNERS OF THE MAJOR PORTION OF THE PRIMARY SITE. ALSO, ACCORDING TO THE TFC PROPERTY BOUNDARY MAP (RECEIVED JULY, 1991) THEY OWN THE STORAGE BASIN AND ATHLETIC FIELD. THE IRRIGATION FIELD IS APPARENTLY OWNED BY A RONALD L. BISHOP OF COLUMBIA, TENNESSEE. PORTIONS OF THE PRIMARY SITE WERE ALSO UTILIZED FROM 1978 TO 1983 (POSSIBLY AS LATE AS 1985) BY R.T. RIVERS FOR METALS MACHINING, STORAGE OF WASTE PRODUCTS OBTAINED FROM OTHER LOCAL INDUSTRIES, AND RECOVERY OF COPPER FROM TRANSFORMERS. THESE ADDITIONAL OPERATIONS WERE CONDUCTED PRIMARILY IN THREE OF THE REMAINING ON-SITE BUILDINGS; NAMELY, THE DRYER BUILDING, THE MAINTENANCE BUILDING, AND THE STORAGE SHED.

THE STORAGE BASIN (FIGURE 4) LOCATED 1400 FEET WEST OF THE PRIMARY SITE WAS BUILT IN THE MID TO LATE 1950'S TO RECEIVE WASTEWATERS FROM THE PRIMARY SITES' INDUSTRIAL OPERATIONS. THE STORAGE BASIN, SIMILAR TO THE PRIMARY SITE CONTAINS COAL-TAR CONTAMINANTS.

THE IRRIGATION FIELD (FIGURE 5) INCLUDING THE ABANDONED LAGOON IS LOCATED 3500 FEET NORTHEAST OF THE PRIMARY SITE. THIS LOCATION WAS CONSTRUCTED IN THE LATE 1950'S AND ALSO RECEIVED WASTEWATERS FOR DISPOSAL FROM THE PRIMARY SITE. WASTEWATERS WERE SPRAYED OVER THE FIELD TO BIOLOGICALLY DEGRADE PHENOLIC AND ORGANIC COMPOUNDS.

THE ATHLETIC FIELD (FIGURE 6) IS LOCATED 800 FEET SOUTHEAST OF THE PRIMARY SITE IN THE EASTERN PORTION OF THE WRIGLEY COMMUNITY. THE SECTION OF PROPERTY WHERE THE FIELD NOW RESIDES WAS FILLED IN WITH BLAST FURNACE SLAG AND ASSOCIATED MATERIALS FROM 1938 TO APPROXIMATELY 1950. THE FIELD HAS BEEN IN USE SINCE THE EARLY 1950'S AND IS STILL REGULARLY USED BY LOCAL RESIDENTS.

#### EPA INVOLVEMENT

EPA BECAME INVOLVED WITH THE WRIGLEY SITE AS A RESULT OF THE SUBMITTAL IN DECEMBER OF 1985 OF A PRELIMINARY HAZARD RANKING SYSTEM SCORE AND REQUEST FOR EMERGENCY ACTION BY THE DIVISION OF SUPERFUND IN TENNESSEE. EPA PERSONNEL VISITED THE SITE IN JANUARY 1986, TO ASSESS THE NEED FOR EMERGENCY ACTION. EPA LATER RECOMMENDED THAT THE RAW WATER INTAKE AT THE BON AQUA-LYLES WATER DISTRICT BE RELOCATED TO AVOID POTENTIAL SITE AFFECTS. IN ADDITION, EPA RECOMMENDED ADDITIONAL SAMPLING TO BETTER DEFINE THE EXTENT AND DEGREE OF CONTAMINATION AT THE SITE, INCLUDING COLLECTION OF WATER SAMPLES AT THE BON AQUA-LYLES WATER DISTRICT INTAKE. IN APRIL OF 1986, EPA SUBSEQUENTLY PERFORMED A SITE SAMPLING EFFORT WHICH CONFIRMED THE PRESENCE OF COAL-TAR CONTAMINANTS AT THE PRIMARY SITE IN LEACHATE, STREAM SEDIMENTS AND TAR-PITS. HIGHEST LEVELS OF CONTAMINANTS REPORTED DURING THIS SAMPLING EFFORT WERE: BENZENE (38 PPB), TOLUENE (308 PPB), PHENOL (10,600 PPM), AND 2,4-DIMETHYLPHENOL (177 PPM) IN TARS LOCATED ON THE SITE. CONTAMINANTS WERE ALSO IDENTIFIED AT THE STORAGE BASIN IN SHALLOW SEDIMENTS. THESE CONTAMINANTS CONSISTED OF: BENZENE (20 PPB), TOLUENE (179 PPB), ETHYLBENZENE (66 PPB), 2-4 DIMETHYLPHENOL (330 PPM). CONTAMINANTS IDENTIFIED IN THE STREAM SEDIMENT INCLUDED: BENZENE (12 PPB), TOLUENE (79 PPB), AND 2-4 DIMETHYLPHENOL (177 PPM). THE WRIGLEY CHARCOAL SITE WAS THEN RANKED UTILIZING THE HAZARD RANKING SYSTEM (HRS) AND GENERATED A HRS SCORE OF 36.14.

#### EPA REMOVAL ACTIVITIES

EPA'S REMOVAL PROGRAM INITIATED STABILIZATION MEASURES ON THE SITE IN THE SUMMER AND FALL OF 1988. MEASURES UNDERTAKEN INCLUDED:

- INSTALLATION OF TWO 48-INCH CULVERTS IN THE NORTH FORK OF MILL CREEK STREAM BED. CULVERTS WERE BACKFILLED WITH CLAY TO PREVENT FURTHER EROSION;

- THREE HUNDRED FEET OF CLEAN SHEET PILING REMOVED FROM THE PEAK OIL SITE (HILLSBOROUGH COUNTY, FLORIDA) WAS TRANSPORTED TO THE WRIGLEY SITE. SHEET PILING WAS INSTALLED TO STABILIZE THE BANKS RETAINING THE TAR-PITS;
- SEVEN SAMPLES WERE COLLECTED FROM THE TAR-PITS, THE EXPLORATORY PIT, AND THE DRYER BUILDING;
- EROSION CONTROL FABRIC AND RIPRAP WERE SPREAD OVER THE EDGES OF THE CULVERTS BACKFILLED WITH CLAY;
- TAR-PIT WASTES WERE SOLIDIFIED BY MIXING WITH SAWDUST;
- MATERIALS SUCH AS MULCH AND LATER SEED WERE SPREAD TO ESTABLISH A VEGETATIVE COVER ON THE TAR-PIT COVER AND NEAR THE CULVERTS;
- RECONSTRUCTION OF THE FENCING (AROUND THE TAR-PIT AREA) PREVIOUSLY REMOVED TO FACILITATE SITE WORK;
- SUSPECTED ACM WAS SAMPLED AT A BUILDING MATERIALS STOCKPILE NEAR THE STILL HOUSE. EIGHT YD3 OF THIS MATERIAL WAS REMOVED AND DISPOSED OFF-SITE AT THE JAMES BRINKLEY LANDFILL IN BEDFORD COUNTY, TENNESSEE. BASED ON SAMPLING RESULTS, THE ACM CONTAINED 60 PERCENT CHRYSOTILE ASBESTOS.
- IN OCTOBER OF 1988, 130 YDS3 OF TAR PIT WASTE (EXCAVATED DURING TAR-PIT SOLIDIFICATION) MATERIAL WAS TRANSPORTED TO THE ALLIED-SIGNAL FACILITY IN DETROIT, MICHIGAN FOR INCINERATION.
- IN 1989, THE SPILLWAY WAS CONSTRUCTED AT THE SOUTHERN PORTION OF THE PRIMARY SITE ADJACENT TO THE CULVERTS TO ACCOMMODATE FLOOD WATERS;
- APPROXIMATELY \$2,000,000 WAS SPENT FROM THE FEDERAL SUPERFUND PROGRAM FOR THESE TAR-PIT SOLIDIFICATION, REMOVAL, DISPOSAL, AND CONSTRUCTION ACTIVITIES.

FOLLOWING THE EPA TAR-PIT STABILIZATION ACTIVITY AND SPILLWAY CONSTRUCTION IN 1988-1989, THE BON AQUA-LYLES WATER DISTRICT PRIMARY WATER INTAKE WAS MOVED. THIS WORK, PERFORMED IN 1989 BY THE UTILITY DISTRICT AND THE STATE OF TENNESSEE, MOVED THE INTAKE FROM ABOUT 1.25 MILES DOWNSTREAM OF THE WRIGLEY CHARCOAL SITE ON MILL CREEK (APPROXIMATELY 1000 FEET BELOW THE CONFLUENCE WITH THE NORTH FORK OF MILL CREEK), TO ABOUT ONE HALF MILE UPSTREAM ON MILL CREEK, ABOVE THE CONFLUENCE OF MILL CREEK AND THE NORTH FORK. THIS ACTIVITY ELIMINATED THE POSSIBLE THREAT OF TAR-PIT CONTAMINATION AFFECTING THE PUBLIC WATER SUPPLY VIA THE RAW WATER INTAKE.

#### RI/FS ACTIVITIES

- IN 1989, EPA CONTRACTED EBASCO SERVICES INCORPORATED TO PERFORM THE RI/FS AT THE WRIGLEY CHARCOAL SITE. BOTH THE RI AND FS WERE TOTALLY FUNDED OUT OF THE FEDERAL SUPERFUND PROGRAM. THE FOLLOWING LIST PRESENTS THE MAJOR EVENTS DURING THE RI/FS:
- AUGUST 1989: THE INITIAL FIELD INVESTIGATION BEGAN
- SEPTEMBER 1989 - SEPTEMBER 1990: ONGOING SAMPLING AND ANALYSIS FOR THE RI;
- NOVEMBER 1990: FS ACTIVITIES ARE INITIATED;

- DECEMBER 1990: EPA COLLECTED ADDITIONAL SAMPLES AT THE ATHLETIC FIELD AND IN THE YARDS OF PRIVATE RESIDENCES THAT FLANK THE PRIMARY SITE AND ATHLETIC FIELD (IN THE EAST AND WEST NEIGHBORHOODS OF WRIGLEY). INITIAL RI SAMPLING AND ANALYSIS INDICATED ELEVATED CONCENTRATIONS OF METALS, VOCS, AND DIBENZOFURAN AT THE ATHLETIC FIELD IN ISOLATED LOCATIONS OUTSIDE THE BALLFIELD FENCE. SINCE DIBENZOFURAN WAS IDENTIFIED DURING THE INITIAL SAMPLING, EPA TOOK PRECAUTIONS BY TAKING ADDITIONAL SAMPLES IN THE TOWN OF WRIGLEY AND ANALYZED SAMPLES SPECIFICALLY FOR DIOXIN (NO HAZARDOUS DIOXINS WERE FOUND IN THE TOWN OR NEIGHBORHOODS OF WRIGLEY). ALL SAMPLES WERE TAKEN TO CONFIRM AND FURTHER DETERMINE THE EXTENT OF CONTAMINATION.
- APRIL 1991: EPA COLLECTED ADDITIONAL SAMPLES AT THE PRIMARY SITE AND STORAGE BASIN. SAMPLES AT THE PRIMARY SITE WERE OF TRANSFORMER WASTE IN SEVERAL BUILDINGS, WASTE SAMPLES AT THE FAR SOUTHERN PORTION OF THE PRIMARY SITE, AND SOIL SAMPLES WERE COLLECTED FROM THE SOUTHERN LAWN OF THE OLD BON AIR CHEMICAL COMPANY OFFICE ADJACENT TO THE PRIMARY SITE. ADDITIONAL SAMPLES WERE TAKEN AT THE STORAGE BASIN TO FURTHER EVALUATE CONTAMINATION. THESE SAMPLES WERE TAKEN AT THE WATERLINE AND IN THE DEEPER SEDIMENTS WITHIN THE BASIN.
- JUNE 1991: THE REVISED FINAL RI IS COMPLETED
- JULY 1991: THE REVISED DRAFT FINAL FS IS COMPLETED.
- SEPTEMBER 1991: THE FINAL FS IS COMPLETED.

#### **#HCP**

#### **HIGHLIGHTS OF COMMUNITY PARTICIPATION**

THE FIRST PUBLIC MEETING WAS HELD ON OCTOBER 24, 1988 AT THE EAST ELEMENTARY SCHOOL NEAR WRIGLEY, TO PROVIDE INFORMATION AND ALSO TO ANSWER CITIZENS' QUESTIONS CONCERNING REMOVAL ACTIVITIES AT THE WRIGLEY SITE. REPRESENTATIVES FROM EPA AND THE STATE OF TENNESSEE PROVIDED DETAILS OF ACTIVITIES TAKEN TO DATE, PERTINENT ANALYTICAL RESULTS AND PROPOSED ACTIVITIES TO BE COMPLETED IN THE FUTURE.

THE SECOND PUBLIC MEETING WAS HELD ON OCTOBER 29, 1989 AT THE EAST ELEMENTARY SCHOOL. THE PURPOSE OF THIS MEETING WAS TO INFORM CITIZENS AND OTHER INTERESTED PARTIES OF THE BEGINNING OF THE RI/FS.

THE THIRD PUBLIC MEETING TO PRESENT THE PROPOSED PLAN FOR INTERIM ACTION (INCLUDING EARLY FINAL ACTION ACTIVITIES) ACTIVITIES CONCERNING THE WRIGLEY CHARCOAL SITE WAS ALSO HELD AT THE EAST ELEMENTARY SCHOOL ON JULY 25, 1991. THE NOTICE OF THE PUBLIC MEETING INCLUDING INFORMATION ON AVAILABILITY OF PROPOSED PLAN AND RI/FS APPEARED IN THE HICKMAN COUNTY TIMES ON JULY 15, 1991. AN ADDITIONAL ARTICLE APPEARED IN THE HICKMAN COUNTY TIMES ON JULY 22, 1991 REITERATING THE PREVIOUSLY PUBLISHED INFORMATION. THE COMMUNITY RELATIONS PLAN FOR THE FS (APPROVED IN 1990) LISTS CONTACTS AND INTERESTED PARTIES THROUGHOUT GOVERNMENT AND THE LOCAL COMMUNITY THAT ESTABLISH COMMUNICATION PATHWAYS TO ENSURE TIMELY DISSEMINATION OF PERTINENT INFORMATION. THE RI/FS AND THE PROPOSED PLAN WERE RELEASED TO THE PUBLIC IN JULY 1991. ALL OF THESE DOCUMENTS WERE MADE AVAILABLE IN BOTH THE ADMINISTRATIVE RECORD AT THE INFORMATION REPOSITORY MAINTAINED AT THE HICKMAN COUNTY MEMORIAL LIBRARY. A PUBLIC COMMENT PERIOD WAS HELD FROM JULY 15, 1991 TO AUGUST 15, 1991. THE TENNESSEE FARMERS COOPERATIVE REQUESTED AN EXTENSION TO THE PUBLIC COMMENT PERIOD. A 30 DAY EXTENSION TO THE PUBLIC COMMENT PERIOD WAS GRANTED, WHICH EXTENDED THE COMMENT PERIOD TO SEPTEMBER 16, 1991. ALL COMMENTS WHICH WERE RECEIVED BY EPA PRIOR TO THE END OF THE PUBLIC COMMENT PERIOD, INCLUDING THOSE EXPRESSED VERBALLY AT THE PUBLIC MEETING ARE ADDRESSED IN THE RESPONSIVENESS SUMMARY (SECTION 12).



## **#SRRA**

### **SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY**

THE MAJOR GOALS OF THESE EARLY FINAL AND INTERIM ACTIONS ARE TO REDUCE RISKS AT THE PRIMARY SITE BY ELIMINATING, OR CONTAINING THE MOST IMMINENT AND SUBSTANTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT WHILE PERMANENT SOLUTIONS ARE DEVELOPED FOR THE ENTIRE SITE. ADDITIONAL GOALS OF THIS ACTION ARE TO REDUCE THE RISK OF DERMAL CONTACT WITH WASTES AT THE STORAGE BASIN BY RESTRICTING ACCESS THROUGH FENCING, AND TO PERFORM CONFIRMATORY SAMPLING AND ANALYSES BEHIND THE ATHLETIC FIELD TO BETTER DEFINE A SMALL "HOT SPOT", AND AT THE IRRIGATION FIELD TO DETERMINE IF COMPOUNDS OF CONCERN ARE PRESENT IN THE DEEPER SOILS OF THE ABANDONED IRRIGATION FIELD LAGOON.

THE CLEANUP OBJECTIVES FOR THIS INTERIM ACTION ROD ARE TO REMOVE, TREAT OR CONTAIN WASTES AT THE WRIGLEY CHARCOAL PRIMARY SITE AND STORAGE BASIN AND TO DETERMINE IF FURTHER REMEDIATION IS REQUIRED AT THE ATHLETIC FIELD AND/OR IRRIGATION FIELD LAGOON. THESE OBJECTIVES ARE ALSO INTENDED TO REDUCE THE RISKS FROM DERMAL CONTACT WITH COAL-TAR SLUDGES AND WASTES, BURN-PIT WASTES, DRUMMED WASTES, AND TAR-CUBES. THE THREAT OF EXPOSURE VIA INHALATION OR INCIDENTAL INGESTION OF CONTAMINANTS SUCH AS ASBESTOS, PHENOLS, OR VOCs FROM EXPOSED COAL-TAR WASTES WILL BE REDUCED. THESE EARLY FINAL AND INTERIM ACTIONS ARE EXPECTED TO REDUCE RISKS ASSOCIATED WITH CURRENT AS WELL AS FUTURE EXPOSURE TO THE CONTAMINANTS.

THIS IS NOT THE FINAL ACTION PLANNED FOR THE SITE. THESE EARLY FINAL AND INTERIM ACTIONS WILL BE CONSISTENT WITH ANY PLANNED FUTURE ACTIONS, TO THE EXTENT POSSIBLE. SUBSEQUENT ACTIONS ARE PLANNED TO DEFINE AND ADDRESS FULLY, ADDITIONAL SIGNIFICANT THREATS POSED BY THE CONDITIONS AT THE SITE. LATER REMEDIAL ACTIVITIES ARE TENTATIVELY INTENDED TO REMEDIATE THE PRIMARY SITE TAR-PITS, CONTAMINATED PRIMARY SITE SOILS, TAR-CUBES, STORAGE BASIN COAL-TAR WASTES, ANY ADDITIONAL COAL-TAR WASTES IDENTIFIED AT ANY OF THE WRIGLEY CHARCOAL SITE AREAS, ANY ACM DETERMINED TO BE FRIABLE, AND ANY GROUNDWATER PROBLEMS AT THE WRIGLEY CHARCOAL SITE.

## **#SSC**

### **SUMMARY OF SITE CHARACTERIZATIONS**

THIS SECTION REVIEWS TOPICS DISCUSSED IN RECENT SITE CHARACTERIZATIONS THAT MAY INFLUENCE EARLY FINAL AND INTERIM ACTION ACTIVITIES. A FULL DESCRIPTION OF CONTAMINANTS AT THE WRIGLEY CHARCOAL SITE IS PRESENTED IN SECTION 7.0 (SUMMARY OF SITE RISKS).

#### **PHYSIOGRAPHY AND TOPOGRAPHY**

THE WRIGLEY CHARCOAL SITE LIES WITHIN THE WESTERN HIGHLAND RIM (FIGURE 7) PHYSIOGRAPHIC PROVINCE, A ROLLING UPLAND PLATEAU TYPICALLY HAVING FROM 200 TO 300 FEET OF VERTICAL RELIEF. THE STRUCTURE OF THE WESTERN HIGHLAND RIM IS CONTROLLED BY THE NASHVILLE DOME, WHICH IS THE SOUTHERN EXTENSION OF THE CINCINNATI ARCH. REGIONAL DIPS ARE TO THE WEST AT LESS THAN 20 FEET PER MILE. A FEW MINOR FOLDS AS WELL AS A NUMBER OF HIGH-ANGLE GRAVITY FAULTS HAVE BEEN DOCUMENTED.

THE LOCAL SETTING AND TOPOGRAPHY WITHIN APPROXIMATELY A 1 MILE RADIUS OF THE SITE IS SHOWN IN FIGURE 8. THE MAIN AREA OF THE SITE LIES AT ELEVATIONS BETWEEN 680 AND 730 FEET ABOVE MEAN SEA LEVEL (MSL).

#### **SURFACE WATER AND DRAINAGE**

A WELL DEVELOPED DENDRITIC DRAINAGE SYSTEM HAS FORMED THROUGHOUT THE AREA OF HICKMAN COUNTY AND THE SITE, WITH DRAINAGE FOLLOWING SYNFORMAL VALLEYS. THE WRIGLEY CHARCOAL SITE IS LOCATED IN THE VALLEY OF THE NORTH FORK OF MILL CREEK (ALSO CALLED THE WARNER BRANCH AND BLACKWATER BRANCH), WHICH IS IN PART SUPPORTED BY SURFACE DRAINAGE FROM THE PRIMARY SITE AND FLOWS FROM

NORTHEAST TO SOUTHWEST ALONG THE WESTERN EDGE OF THE SITE. THE NORTH FORK OF MILL CREEK FLOWS INTO MILL CREEK ABOUT A MILE DOWNSTREAM FROM THE SITE. MILL CREEK IS A TRIBUTARY OF THE PINEY RIVER (FIGURE 9) WHICH FLOWS TO THE DUCK RIVER. THE MAJORITY OF THE COUNTY IS DRAINED BY THE DUCK RIVER, WHICH IS A TRIBUTARY OF THE TENNESSEE RIVER.

THE NORTH FORK OF MILL CREEK HAS ITS HEADWATERS APPROXIMATELY 1.8 MILES NORTH OF THE SITE NEAR THE TOWN OF LYLES. IT FLOWS ABOUT 1.1 MILES FROM THE SITE TO ITS CONFLUENCE WITH MILL CREEK (FIGURE 9). MILL CREEK HAS ITS HEADWATERS ABOUT 5 MILES EAST-NORTHEAST OF ITS CONFLUENCE WITH THE NORTH FORK, AND ABOUT 1.5 MILES SOUTHWEST OF BON AQUA JUNCTION. IT IS FED BY SEVERAL PERENNIAL AND WET WEATHER SPRINGS. SPRINGS ARE COMMON IN THE MILL CREEK DRAINAGE BASIN, AND SEVERAL ARE LOCATED IN THE IMMEDIATE AREA OF THE WRIGLEY CHARCOAL SITE. THERE ARE TWO MAIN SOURCES FOR SPRINGS IN THIS AREA, THE FIRST BEING THE HIGHLY PERMEABLE RESIDUAL SOILS COVERING MOST OF THE AREA, AND THE SECOND BEING SOLUTION CHANNELS IN LIMESTONE-RICH AREAS OF THE BEDROCK.

#### CLIMATOLOGY

THERE IS NO CLIMATOLOGICAL REPORTING STATION IN THE TOWN OF WRIGLEY SO THE MAJORITY OF THE DATA PRESENTED IN THIS SECTION IS FROM THE DICKSON STATION APPROXIMATELY 15 MILES NORTHWEST. THE WIND DIRECTION INFORMATION WAS ACQUIRED FROM THE NASHVILLE STATION APPROXIMATELY 45 MILES NORTH-NORTHEAST OF WRIGLEY SITE. THE ANNUAL MEAN TEMPERATURE FOR THE AREA IS 59.9 DEGREES F., WITH JANUARY BEING THE COLDEST MONTH WITH A MEAN TEMPERATURE OF 40.8 DEGREES F. JULY IS THE WARMEST MONTH WITH A MEAN TEMPERATURE OF 79.1 DEGREES F. THE AVERAGE RAINFALL IS 51.6 INCHES WITH THE GREATEST PRECIPITATION GENERALLY OCCURRING DURING WINTER AND SPRING. THE AVERAGE SNOWFALL FOR THE LOCATION IS 10.9 INCHES. WINDS WITHIN THE DICKSON-WRIGLEY AREA ARE GENERALLY SOUTHERLY (40 PERCENT SOUTH, 30 PERCENT NORTH, 14 PERCENT WEST, AND 8 PERCENT EAST, AND 8 PERCENT CALM). THE MEAN NUMBER OF CLOUDY DAYS REPORTED FROM THE NASHVILLE STATION IS 125 DAYS/YEAR WITH JANUARY BEING THE MONTH WITH THE MOST CLOUD COVER WITH THE MEAN OF 16 DAYS/MONTH. THE SUMMER MONTHS JUNE THROUGH SEPTEMBER HAVE THE LEAST CLOUD COVER AND AVERAGE 7 DAYS/MONTH. AT THE DICKSON, TENNESSEE STATION THE MEAN DATE FOR THE LAST SPRING OCCURRENCE OF FROST IS 4/10 AND THE MEAN DATE FOR THE FIRST FALL OCCURRENCE IS 10/23. THE MEAN NUMBER OF DAYS THE TEMPERATURE DOES NOT RISE ABOVE 32 DEGREES IS 9 DAYS/YEAR.

#### DEMOGRAPHY AND WATER USE

THE TOWN OF WRIGLEY IS THE NEAREST COMMUNITY TO THE WRIGLEY CHARCOAL SITE. THERE ARE APPROXIMATELY 1000 PEOPLE LIVING WITHIN A ONE-MILE RADIUS OF THE SITE. TWENTY-THREE RESIDENCES ARE LOCATED ALONG THE WESTERN RIDGE PARALLELING THE PRIMARY SITE AND APPROXIMATELY 18 RESIDENCES ARE LOCATED ALONG THE EASTERN EDGE OF THE PRIMARY SITE.

THERE ARE APPROXIMATELY 25 HOMES ADJACENT TO THE IRRIGATION FIELD AND 15 HOMES ADJACENT TO THE ATHLETIC FIELD. ALMOST ALL OF THE RESIDENCES ARE CONNECTED TO THE BON AQUA-LYLES WATER UTILITY AND DO NOT REQUIRE PRIVATE WELLS FOR DRINKING WATER. IN HICKMAN COUNTY, APPROXIMATELY 5,500 RESIDENCES ARE SERVED BY THIS WATER UTILITY. HOWEVER, THERE ARE 9 RESIDENTIAL WELLS WITHIN AN APPROXIMATE 1 MILE RADIUS OF THE SITE AND IT IS LIKELY THAT 3 OF THE WELLS ARE UTILIZED FOR DRINKING WATER.

#### LAND USE AND SITE ACCESS

THE WRIGLEY CHARCOAL PRIMARY SITE AREA IS NOT CURRENTLY IN USE BUT IT IS CONCEIVABLE THAT FUTURE INDUSTRIAL ACTIVITIES COULD TAKE PLACE HERE. MANY OF THE LARGER BUILDINGS INCLUDING THE WAREHOUSE, DRYER AND MAINTENANCE BUILDINGS ARE INTACT. ALTHOUGH IT WOULD BE EXPENSIVE, THESE STRUCTURES COULD BE RESTORED AND UTILIZED FOR FUTURE INDUSTRIAL ACTIVITIES. THE SITE IS READILY ACCESSED BY ANYONE THAT IGNORES THE WARNING SIGNS AND WALKS AROUND THE GATES ON THE EAST ENTRANCE OR AT THE GATE ON THE SOUTHWEST ENTRANCE. THERE IS NO GATE ON THE ROAD AT THE NORTH

ENTRANCE UP THE VALLEY ALONG THE NORTH FORK OF MILL CREEK BUT ACCESS IS DIFFICULT DUE TO THE EXCESSIVE VEGETATION AND A 15 FOOT DEEP WASH-OUT IN THE ROAD. ACCESS IS NEEDED TO THIS SITE BY THE ELECTRIC UTILITY (TENNESSEE VALLEY AUTHORITY) THAT MAINTAINS AN ELECTRIC SUB-STATION AT THE NORTH END OF THE SITE, AND BY THE GAS UTILITY (EAST TENNESSEE NATURAL GAS CO.) THAT MAINTAINS A NATURAL GAS PIPELINE LOCATED ADJACENT TO THE SUB-STATION. THE NATURAL GAS PIPELINE RUNS EAST-WEST ACROSS THIS PORTION OF THE PRIMARY SITE. THE UTILITY COMPANIES HAVE PREVIOUSLY CONTACTED THE TFC TO ACQUIRE A KEY FOR ACCESS OF THE EAST ENTRANCE. THESE UTILITY COMPANIES CURRENTLY USE THE EAST ROAD FOR ACCESS.

THE STORAGE BASIN IS LOCATED IN AN ISOLATED AREA SOUTHWEST OF THE PRIMARY SITE AND HAS NOT BEEN UTILIZED FOR ANY WASTE WATER DISPOSAL ACTIVITIES SINCE 1966. AT PRESENT, THE STORAGE BASIN IS FULL OF WATER AND IS APPROXIMATELY 3-5 FEET DEEP. AN OVERFLOW TUBE CONNECTS THE STORAGE BASIN TO THE OVERFLOW BASIN SO THAT DURING HEAVY RAINFALL EVENTS, EXCESS WATERS FLOW INTO THE OVERFLOW BASIN. WITHIN THE OVERFLOW BASIN IS ANOTHER OVERFLOW TUBE THAT RELIEVES THE OVERFLOW BASIN OF EXCESS WATERS. THIS TUBE MOST LIKELY DISCHARGES EXCESS WATERS INTO CLARK HOLLOW NORTH OF THE OVERFLOW BASIN. WITHIN THE STORAGE BASIN A THIN DRAPE OF SEDIMENT COVERS COAL-TAR WASTES IN THE DEEPER SEDIMENTS THEREBY ISOLATING THESE DEEPER SEDIMENTS. THIS NATURAL ISOLATION OF THE CONTAMINANTS GIVES THE POND A VERY CLEAN APPEARANCE. THE CASUAL VISITORS WHICH INCLUDE WALKERS, MOTORCYCLISTS, HUNTERS, AND POSSIBLY FISHERMAN ARE LIKELY TO USE THE STORAGE BASIN AND OVERFLOW BASIN FOR RECREATIONAL PURPOSES.

THE AREA IS READILY ACCESSIBLE BY FOOT BUT VEHICULAR TRAFFIC IS RESTRICTED BY THE STEEP GRADE OF THE SMALL OVERGROWN ROAD THAT CONNECTS THE VALLEY ROAD WITH THE STORAGE BASIN.

AT PRESENT, IT IS UNLIKELY FOR THIS AREA TO BE USED FOR RESIDENTIAL OR FARMING APPLICATIONS DUE TO ITS ISOLATED LOCATION AND ROUGH TERRAIN.

THE IRRIGATION FIELD HAS NOT BEEN UTILIZED FOR WASTE WATER DISPOSAL SINCE 1966. THE FIELD IS A RELATIVELY FLAT LYING AREA THAT IS PRESENTLY VEGETATED WITH SMALL TREES AND WEEDS. THE ABANDONED LAGOON AT THE WESTERN EDGE OF THE FIELD IS PRESENTLY A SWAMPY AREA THAT CONTAINS SOME LARGER TREES AND ABUNDANT VEGETATION. AT THE SOUTHERN PORTION OF THE FIELD ARE A LINE OF HOMES THAT HAVE BEEN BUILT SINCE THE 1960'S ACCORDING TO THE ENVIRONMENTAL PHOTOGRAPHIC INTERPRETATION CENTER (EPIC) PHOTOS.

IT IS POSSIBLE THAT FUTURE USES OF THIS LOCATION INCLUDE RESIDENTIAL. DUE TO THE SITE BEING FLANKED BY HOMES (SOUTH) AND CHURCHES (NORTHEAST), IT IS POSSIBLE THAT THE PROPERTY COULD ALSO BE DEVELOPED SIMILARLY. IT ALSO IS POSSIBLE THIS PROPERTY COULD BE USED FOR FARMING.

ALTHOUGH THIS AREA IS READILY ACCESSIBLE, THICK UNDERBRUSH, WEEDS AND SMALL TREES MAKE ACCESS DIFFICULT. AT PRESENT A SMALL ROAD IS USED AT THE NORTHERN BOUNDARY OF THE FIELD FOR DUMPING OF TRASH.

PRIOR TO 1938 THE ATHLETIC FIELD (L.A. MILLER PARK) WAS THE LIKELY LOCATION OF A SMALL DUMP FOR THE TOWN OF WRIGLEY. FROM 1938-1950 SLAG AND SOILS FROM THE PRIMARY SITE WERE TRANSPORTED TO THIS LOCATION TO CONSTRUCT WHAT LATER BECAME THE ATHLETIC FIELD. THIS LOCATION IS PRESENTLY A BASEBALL FIELD FLANKED BY TWO ROADS AND SURROUNDED BY HOMES. AT THE FAR SOUTHERN EDGE OF THE FIELD IS A PLOT BEING USED FOR A GARDEN. THE PLOT IS APPROXIMATELY 35 X 80 FEET AND IS LOCATED APPROXIMATELY 50 FEET AWAY FROM THE LOCATION OF THE SAMPLES COLLECTED DURING THE RI WHICH SHOWED ELEVATED LEAD LEVELS OR "HOT-SPOTS". THE FIELD IS USED DAILY BY CHILDREN AND OTHERS FOR VARIOUS ACTIVITIES. THIS LOCATION IS ALSO USED FOR THE WRIGLEY DAY EVENT WHICH IS HELD ON AN ANNUAL BASIS ON THE LAST WEEKEND OF JUNE. AS MANY AS 800 PEOPLE HAVE BEEN REPORTED TO ATTEND THIS FUNCTION HELD AT THE FIELD.

FUTURE USES OF THIS PROPERTY ARE LIKELY TO REMAIN THE SAME SINCE THIS IS THE ONLY LOCATION IN WRIGLEY THAT COULD BE USED AS AN ATHLETIC FIELD. HOWEVER, IT IS POSSIBLE THAT THE PLOT USED FOR GROWING VEGETABLES BEHIND THE FIELD COULD BE EXPANDED TO ENCROACH ON THE "HOT SPOT" IDENTIFIED DURING THE RI.

## GEOLOGY

THREE GEOLOGIC FORMATIONS, ALL OF MISSISSIPPIAN AGE, OCCUR IN THE AREA OF THE SITE. FROM YOUNGEST TO OLDEST, THE FORMATIONS ARE:

1. THE ST. LOUIS LIMESTONE
2. THE WARSAW LIMESTONE
3. THE FORT PAYNE CHERT

A STRATIGRAPHIC COLUMN FOR THE AREA IS SHOWN IN FIGURE 10. IN ADDITION, A CROSS-SECTIONAL LAYOUT MAP DEPICTING PRIMARY SITE CROSS-SECTIONS AS PRESENTED IN THE RI ARE PRESENTED IN FIGURE 11. A REPRESENTATIVE CROSS-SECTION OF THE PRIMARY SITE NORTH TO SOUTH IS PRESENTED IN FIGURE 12. BRIEF DESCRIPTIONS OF THE OCCURRENCE AND CHARACTERISTICS OF THESE FORMATIONS ARE PRESENTED BELOW.

### ST. LOUIS LIMESTONE

THE ST. LOUIS LIMESTONE OCCUPIES THE TOPS OF THE HIGHEST RIDGES SURROUNDING THE WRIGLEY CHARCOAL SITE. IT CONSISTS OF PALE TO DARK YELLOWISH BROWN, FINE TO COARSE-GRAINED, THICK-BEDDED, FOSSILIFEROUS LIMESTONE THAT IS LOCALLY SILTY AND CHERTY. IT WEATHERS TO A RESIDUAL SOIL OF REDDISH SANDY CLAY CONTAINING BLOCKS UP TO 10 INCHES IN DIAMETER OF VARIABLY COLORED, DENSE AND PARTLY FOSSILIFEROUS DENSE, BRITTLE, CHERT.

### WARSAW LIMESTONE

THE WARSAW LIMESTONE MAKES UP THE SLOPES OF THE RIDGES AND SOME OF THE LOWER RIDGE CRESTS SURROUNDING THE WRIGLEY SITE. THE WARSAW CONSISTS OF LIGHT OLIVE-GRAY TO PALE YELLOWISH-BROWN, MEDIUM TO VERY COARSE-GRAINED, CROSS-BEDDED, STYOLITIC, FOSSILIFEROUS LIMESTONE. THE WARSAW WEATHERS TO A RESIDUAL SOIL CONSISTING OF BLOCKS OF POROUS TO DENSE FOSSILIFEROUS CHERT, EMBEDDED IN REDDISH SANDY CLAY WITH SANDSTONE COBBLES AND BOULDERS. A SANDSTONE OUTCROP, TENTATIVELY ASCRIBED TO THE WARSAW, HAS BEEN DESCRIBED IN THE LITERATURE AT WRIGLEY NEAR THE MANSION (PREVIOUS BON AIR COMPANY OFFICE).

### FORT PAYNE CHERT

THE FORT PAYNE CHERT IS THE PRIMARY BEDROCK UNIT UNDER THE WRIGLEY SITE. THERE ARE TWO FACIES OF THE FORT PAYNE CHERT IN THE AREA. THE UPPER UNIT, WHICH IS FROM 40 TO 160 FEET IN THICKNESS, CONSISTS OF BROWN CHERT PLATES AND PARTICLES IN A CALCAREOUS SILTSTONE MATRIX, LOCALLY MIXED WITH FOSSIL-FRAGMENTAL LIMESTONE. THE LOWER UNIT, WHICH IS FROM 40 TO 80 FEET IN THICKNESS, CONSISTS OF BROWN OR GRAY SILTSTONE WITH SCATTERED CHERT BEDS. THE TOTAL COMBINED THICKNESS OF THE FORT PAYNE IN THIS AREA IS APPROXIMATELY 300 FEET.

THE GROUND SURFACE AT THE PRIMARY SITE AVERAGES ABOUT 30 TO 40 FEET BELOW THE CONTACT OF THE FORT PAYNE WITH THE OVERLYING WARSAW FORMATION. THIS LOCATION SUGGESTS THAT THE SITE LIES ON THE RESIDUUM OF THE UPPER CHERTY FACIES OF THE FORT PAYNE. BECAUSE OF PLACEMENT OF FILL AND WASTE (SLAG AND TAR) ON MUCH OF THE SITE, THE NATIVE SOILS HAVE NOT BEEN OBSERVED AT OR NEAR THE SURFACE IN THE SOUTHERN PORTION OF THE SITE. IN THE NORTHERN PORTION OF THE SITE, THE SOILS ARE VERY CHERTY AND SILTY AND CONTAIN VARIABLE AMOUNTS OF SANDSTONE COBBLES WEATHERED FROM THE OVERLYING WARSAW.

## SOILS

A GENERAL MAP PROVIDED BY THE US SOIL CONSERVATION SERVICE (SCS, 1977) IS PRESENTED FOR HICKMAN COUNTY. THE MAP DOES NOT REVEAL A GREAT DEAL OF DETAIL BUT GENERAL UNIT BOUNDARIES ARE CLEARLY DEFINED. AS DEPICTED IN FIGURE 13, THE SOILS IN AND AROUND THE WRIGLEY CHARCOAL SITE CONSIST OF THE BODINE-BAXTER-ENNIS ASSOCIATION (1), THE MONTVIEW-DICKSON-BODINE ASSOCIATION (2), AND HUMPHREYS-ENNIS-LOBELVILLE ASSOCIATION (5). THE VALLEY WHERE THE PRIMARY SITE RESIDES IN THE BODINE-BAXTER-ENNIS SOILS. FURTHER DOWN THE VALLEY SOUTHWEST SOILS CHANGE AT THE CONFLUENCE OF MILL CREEK TO HUMPHREYS-ENNIS-LOBELVILLE. THE HIGHER FLAT LANDS AND HILLS THAT SURROUND THE PRIMARY SITE WHERE THE STORAGE BASIN, ATHLETIC FIELD, AND LIKELY THE IRRIGATION FIELD RESIDE CONSIST OF MONTVIEW-DICKSON-BODINE SOILS. OTHER SOILS UNITS MAY BE PRESENT TO LESSER DEGREES AND UNPUBLISHED SOILS INFORMATION OBTAINED FROM THE SCS INDICATES THAT SOILS OF AS MANY AS SIX SERIES MAY BE PRESENT AT THE SITE OR IN SURROUNDING AREAS. BRIEF SOIL DESCRIPTIONS ARE PRESENTED BELOW WITH SOME OVERLAP OF SOIL ASSOCIATIONS. THEREFORE, THIS INFORMATION WILL NOT BE REPEATED FOR EACH ASSOCIATION. ADDITIONAL INFORMATION IS PRESENTED IN APPENDIX A.

### BODINE-BAXTER-ENNIS ASSOCIATION

THE BODINE SERIES CONSISTS OF DEEP, SOMEWHAT EXCESSIVELY DRAINED, CHERTY SOILS ON UPLANDS. THESE SOILS HAVE PALE BROWN, CHERTY SILT LOAM A HORIZONS, AND YELLOWISH BROWN AND STRONG BROWN, CHERTY SILT LOAM AND CHERTY SILTY CLAY LOAM B HORIZONS WHICH BECOME INCREASINGLY CHERTY WITH DEPTH.

THE BAXTER SERIES CONSISTS OF DEEP, WELL DRAINED CHERTY SOILS ON UPLANDS. THEY FORMED IN MATERIAL WEATHERED FROM CHERTY LIMESTONE. TYPICALLY THESE SOILS HAVE A BROWN CHERTY SILT LOAM SURFACE LAYER NINE INCHES THICK.

THE ENNIS SERIES CONSISTS OF DEEP, WELL DRAINED, CHERTY MODERATELY RAPID PERMEABLE SOILS THAT FORMED IN ALLUVIAL SEDIMENTS DERIVED FROM LIMESTONE, SHALE, SANDSTONE, AND LOESS. THESE SOILS ARE ON BOTTOM LANDS, IN NARROW STRIPS ALONG DRAINWAYS AND IN DEPRESSIONS.

### MONTVIEW-DIXON-BODINE ASSOCIATION

THE MONTVIEW SERIES CONSISTS OF VERY DEEP, WELL DRAINED SOILS THAT FORMED IN A 2 TO 3 FOOT THICK SILTY MANTLE, PRESUMABLY LOESS, UNDERLAIN BY RESIDUUM OF CHERTY OR CLAYEY LIMESTONE OR BY OLD ALLUVIUM.

THE DICKSON SERIES CONSISTS OF MODERATELY WELL DRAINED SOILS THAT IN A REPRESENTATIVE PROFILE HAVE A 7 INCH BROWN SILT LOAM LAYER. THE SUBSOIL DOWN TO THE FRAGIPAN AT 25 INCHES IS YELLOWISH BROWN FRIABLE SILT LOAM. THE FRAGIPAN WHICH EXTENDS FROM 25 TO 45 INCHES IS YELLOWISH MOTTLED AND BRITTLE SILTY CLAY LOAM. BELOW THE FRAGIPAN IS YELLOWISH RED FIRM CLAY.

### HUMPHREYS-ENNIS-LOBELVILLE ASSOCIATION

THE HUMPHREYS SERIES CONSISTS OF DEEP, WELL DRAINED SOILS ON TERRACES. THEY FORMED IN ALLUVIUM FROM CHERTY LIMESTONE, LOESS, AND SHALE. NO ADDITIONAL INFORMATION IS AVAILABLE FOR THIS ASSOCIATION IN THE VICINITY OF THE SITE.

OTHER SERIES PRESENT IN THIS AREA INCLUDE THE BIFFLE AND SENG TOWN SERIES. THESE SERIES ARE BRIEFLY DESCRIBED BELOW. HOWEVER, THESE SOILS SERIES ARE LESS LIKELY TO BE FOUND AT THE SITE BUT ARE FOUND THROUGHOUT HICKMAN COUNTY.

THE BIFFLE SERIES CONSISTS OF MODERATELY DEEP, SOMEWHAT EXCESSIVELY DRAINED, CHERTY SOILS ON UPLANDS. THEY HAVE FORMED IN RESIDUUM FROM CHERTY LIMESTONE.

THE SENG TOWN SERIES CONSISTS OF DEEP, WELL DRAINED, MODERATELY PERMEABLE SOILS. THEY FORMED IN RESIDUUM WEATHERED FROM CHERTY LIMESTONE. THEY OCCUR ON SLOPING TO STEEP UPLANDS.

#### #SSR

#### SUMMARY OF SITE RISKS

CERCLA DIRECTS THAT THE AGENCY MUST PROTECT HUMAN HEALTH AND THE ENVIRONMENT FROM CURRENT AND POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES AT SUPERFUND SITES. IN ORDER TO ASSESS THE CURRENT AND POTENTIAL RISKS FOR THE WRIGLEY CHARCOAL SITE, A RISK ASSESSMENT THAT COMPRISES VOLUME III OF THE RI REPORT HAS BEEN CONDUCTED.

THE RESULTS OF THE RI/FS (INCLUDING RISK ASSESSMENT) INDICATED THAT THERE ARE A WIDE RANGE OF HAZARDOUS MATERIALS AND CONTAMINANTS AT THE PRIMARY SITE AND STORAGE BASIN. ADDITIONAL INFORMATION OBTAINED DURING 1991 FOR THE PRIMARY SITE AND STORAGE BASIN SUPPORTS LIMITED (EARLY FINAL AND INTERIM) ACTIONS AT THESE TWO LOCATIONS. HOWEVER, THE INFORMATION GENERATED FROM THESE STUDIES WAS INCONCLUSIVE CONCERNING THE EXTENT OF CONTAMINATION FOR THE IRRIGATION AND ATHLETIC FIELDS. ADDITIONAL INFORMATION WILL BE NEEDED IN ORDER TO FULLY ASSESS RISKS AT THE IRRIGATION FIELD AND TO IDENTIFY THE EXTENT OF THE "HOT SPOT" BEHIND THE ATHLETIC FIELD AND THE ASSOCIATED RISKS. RESULTS OF THIS SAMPLING WILL FORM THE BASIS FOR FUTURE ACTIONS TO BE TAKEN AT THE ATHLETIC FIELD AND/OR IRRIGATION FIELD.

THE FOLLOWING SUMMARY LISTS SPECIFIC EARLY FINAL AND INTERIM ACTION ITEMS (PREVIOUSLY DISCUSSED ON PAGE 2) AND ASSOCIATED CONTAMINANTS THAT MAY POSE A POTENTIAL THREAT. LONG-TERM HUMAN HEALTH RISK CALCULATIONS AND ENVIRONMENTAL RISKS WILL BE DISCUSSED DURING FUTURE RESPONSE ACTIONS. EARLY FINAL ACTIONS CONCERNING SLUDGES AND WASTES WILL BE CLEANED UP TO ACCEPTABLE SOIL CONCENTRATION (ASC) LEVELS AS PRESENTED IN APPENDIX F.

14. HAZARDOUS SUBSTANCES IN THE MAINTENANCE BUILDINGS' BURN-PIT WASTES AT THE PRIMARY SITE CONTAIN: 1) LEAD (1,600 PPM); 2) CHROMIUM (270 PPM); 3) COPPER (7,900 PPM); 4) ZINC (2,300 PPM); 5) NICKEL (160 PPM); 6) CADMIUM (36 PPM); AND 7) BARIUM (120 PPM). THE ASC FOR LEAD REPORTED IN THE RI FOR THE PRIMARY SITE (LIGHT INDUSTRIAL USE) IS 121 PPM (THE ASC FOR COPPER IS 3,200 PPM). ON SEPTEMBER 7, 1989, EPA ESTABLISHED AN INTERIM GUIDANCE FOR SOIL LEAD CLEANUP LEVELS AT SUPERFUND SITES (DIRECTIVE 9355.4-02). THIS DIRECTIVE SET SOIL LEAD CLEANUP LEVELS FROM 500-1000 PPM DEPENDING ON THE LAND USE. EPA IS CONSIDERING 1000 PPM AS A CLEANUP GOAL FOR THE BURN-PIT AREA SINCE THE SITE IS PRESENTLY ZONED, AND EXPECTED TO REMAIN IN THE FUTURE, A LIGHT INDUSTRIAL SITE. THE AMOUNT OF LEAD NOTED IN THE BURN-PIT IS SIGNIFICANTLY ABOVE THE RECOMMENDED CLEANUP VALUE OF 1000 PPM, (AND THE AMOUNT OF COPPER IS SIGNIFICANTLY ABOVE THE ASC FOR COPPER). THEREFORE, EPA HAS DETERMINED THAT A POTENTIAL RISK TO HUMAN HEALTH EXISTS DUE TO POTENTIAL FOR DERMAL CONTACT AND/OR INCIDENTAL INGESTION OF THESE WASTES, AND POTENTIAL RISKS WHICH EXIST TO THE ENVIRONMENT FROM MIGRATION OF THESE WASTES TO THE NORTH FORK OF MILL CREEK VIA GROUNDWATER.
15. CONTAMINANTS AT THE STORAGE BASIN IN THE DEEP SEDIMENTS WERE IDENTIFIED DURING THE APRIL 1991 SAMPLING EVENT CONDUCTED AS A REMOVAL ACTION. SAMPLES OF THE DEEP SEDIMENTS IDENTIFIED 20 ORGANIC COMPOUNDS AND 9 METALS. CONTAMINANTS IN THESE SEDIMENTS CONSISTED OF THE FOLLOWING: 1) SEMI-VOLATILE COMPOUNDS (74,032 PPM INCLUDING PHENOLS AT 26,700 PPM); 2) METALS (6025 PPM), AND 3) VOCs (610 PPM). SINCE THE ASC FOR CARCINOGENIC PAHS AS REPORTED IN THE RI IS 8.17 PPM, FOR NON-CARCINOGENIC PAHS IS 34,600 PPM, AND FOR PHENOLS IS 100, THE STORAGE BASIN AREA POSES A POTENTIAL THREAT TO ANYONE THAT MAY COME INTO CONTACT WITH WASTES THROUGH DERMAL CONTACT OR INCIDENTAL INGESTION. THEREFORE, DUE TO THE HIGH LEVEL OF PAHS AND PHENOLS IN THE STORAGE BASIN SEDIMENTS, AND OPEN ACCESS, EPA HAS DETERMINED THAT THIS LOCATION ALSO POSES A RISK TO HUMAN HEALTH AND THE ENVIRONMENT.

16. THE PROCESS TANK COAL-TAR WASTES (MIXED WITH SOIL AND DEBRIS) ACROSS THE NORTH FORK OF MILL CREEK AT THE PRIMARY SITE WERE SAMPLED AND ELEVATED LEVELS OF CONTAMINANTS IDENTIFIED. A TOTAL OF 16 ORGANIC AND 5 INORGANIC CONSTITUENTS WERE IDENTIFIED. CONTAMINANTS CONSISTED OF THE FOLLOWING: 1) PHENOLS (20,000 PPM); 2) TOTAL PAHS (737 PPM)-INCLUDING CARCINOGENIC PAHS (359 PPM); 3) VOCS (1750 PPM); 4) COPPER (2,400 PPM); 5) LEAD (340 PPM); 6) NICKEL (110 PPM); 7) ZINC (110 PPM); AND 8) AND BARIUM (50 PPM). THE HIGH LEVELS OF PHENOLS, CARCINOGENIC PAHS, AND VOCS MAKE THE PROCESS TANK WASTES A POTENTIAL RISK TO HUMAN HEALTH BY WAY OF DERMAL CONTACT, INCIDENTAL INGESTION, OR INHALATION. WASTES ARE POTENTIAL RISKS TO THE ENVIRONMENT SINCE THEY ARE ADJACENT TO THE NORTH FORK OF MILL CREEK AND PERIODICALLY LEAK FROM THE PROCESS TANKS AND CAN MIGRATE INTO THE CREEK. ALSO, IF THESE TANKS WERE TO RUPTURE AND RELEASE INTO THE ENVIRONMENT THE PRESENTLY CONTAINED WASTES, THE POTENTIAL FOR SIGNIFICANT HEALTH RISKS TO WORKERS AND THE ENVIRONMENT WOULD BE SIGNIFICANT. THESE WASTES CONTAIN VARIOUS CARCINOGENIC CHEMICALS SUCH AS: PAHS, VOCS, LEAD, AND NICKEL.
17. PERIODICALLY, BLACK COAL-TAR WASTES LEAK OUT OF THE PROCESS TANKS. THESE WASTES, ONCE ON THE GROUND, MIGRATE DOWN THE STEEP HILL APPROXIMATELY 50 FEET TO THE NORTH FORK OF MILL CREEK. CONTAMINANT TYPES ARE THE SAME AS THE PROCESS TANKS BUT CONCENTRATIONS OF VOCS IN THIS CONTAMINATED MEDIA ARE LIKELY TO BE LESS DUE TO VOLATILIZATION. RISKS ASSOCIATED WITH THESE WASTES ARE SIMILAR TO PROCESS TANK WASTES. THEREFORE, THESE ALSO POSE A POTENTIAL THREAT TO ANYONE THAT MAY COME IN CONTACT WITH THE WASTES. ALSO, WASTES ARE A POTENTIAL THREAT TO THE NORTH FORK OF MILL CREEK DUE TO THE MIGRATION PATHWAY FROM THE TANKS DOWN THE STEEP HILL TO THE CREEK.
18. AT THE PREVIOUS LOCATION OF THE STILL HOUSE, BLACK COAL-TARS PERIODICALLY BUBBLE TO THE SURFACE DURING THE SUMMER. THIS HAS BEEN NOTED TO OCCUR AT THE NORTHEAST CORNER OF THE OLD FOUNDATION. SOIL SAMPLES IN THE VICINITY OF THE FOUNDATION CONTAIN CARCINOGENIC PAHS (24 PPM). SAMPLES AND ANALYSES OF THE COAL-TARS THAT BUBBLED TO THE SURFACE IN THE SUMMER OF 1991 HAVE NOT BEEN ACQUIRED, HOWEVER, IT IS LIKELY THAT LEVELS OF PAHS AND OTHER CONTAMINANTS ARE SUBSTANTIALLY HIGHER IN THESE WASTES THAN IN THE ADJACENT SOILS. SINCE THE LEVEL OF CARCINOGENIC PAHS IS 3 TIMES THAT OF THE ASC (8.17) IN THE VICINITY OF THESE COAL-TAR SEEPS, EPA ALSO CONSIDERS THIS LOCATION TO BE A POTENTIAL THREAT TO HUMAN HEALTH DUE TO THE POTENTIAL FOR DERMAL CONTACT. ALSO, WASTES ARE A POTENTIAL ENVIRONMENTAL THREAT SINCE THEY ARE ADJACENT TO THE NORTH FORK OF MILL CREEK AND COULD READILY MIGRATE VIA SURFACE WATERS.
19. ROOFING MATERIALS AT THE PRIMARY SITE WERE ANALYZED AND FOUND TO CONTAIN 60 PERCENT CHRYSOTILE ASBESTOS, 30 PERCENT NON-FIBROUS BINDER, AND 10 PERCENT CELLULOSE. ASBESTOS IS A KNOWN CARCINOGEN FOR WHICH A SAFE EXPOSURE LEVEL CANNOT BE ESTABLISHED AND STUDIES HAVE DOCUMENTED ASBESTOS RELATED DISEASES WITH MINIMAL EXPOSURE. THE EPA REGION IV ASBESTOS UNIT HAS REVIEWED THE FS FOR THE WRIGLEY SITE AND HAS DETERMINED THAT THE FRIABLE MATERIAL ON THE SMALL BUILDING IN FRONT OF THE MAINTENANCE BUILDING AND ANY ACM ON THE GROUND POSES A POTENTIAL RISK TO HUMAN HEALTH DUE TO THE POTENTIAL FOR INHALATION OF ASBESTOS FIBERS. THESE MATERIALS ALSO POSE A POTENTIAL THREAT TO THE ENVIRONMENT SINCE BROKEN ACM SHEETS MAY MIGRATE VIA SURFACE WATERS INTO THE NORTH FORK OF MILL CREEK. ONCE ACMS GET INTO THE CREEK THEY CAN BECOME INCORPORATED INTO ADJACENT (SURFICIAL) SEDIMENTS, THEN DURING DRY CONDITIONS THE MATERIALS MAY BECOME AIRBORNE IF AGITATED.
20. DURING THE SPRING FLOODS OF 1991, BLACK COAL-TAR WASTES WERE EXPOSED IN THE SPILLWAY. NO SAMPLING OR ANALYSIS HAS BEEN ATTEMPTED ON THESE NEWLY EXPOSED MATERIALS. IT IS LIKELY THESE ARE SIMILAR COAL-TAR DERIVATIVES THAT HAVE BEEN IDENTIFIED ELSEWHERE AT THE WRIGLEY SITE. AT EVERY LOCATION ANALYZED FOR COAL-TAR WASTES, THE LEVELS WERE FOUND TO BE ABOVE ASCS. THERE IS NO PRESENT REASON TO ASSUME THAT THESE COAL-TAR WASTE CONCENTRATIONS ARE BELOW ASCS. RISKS ASSOCIATED WITH THESE CONTAMINATED MEDIA LIKELY POSE A POTENTIAL THREAT

TO HUMAN HEALTH THROUGH DERMAL CONTACT SINCE WASTES ARE EXPOSED. WASTES ALSO POSE A POTENTIAL THREAT TO THE ENVIRONMENT SINCE THEY ARE IN THE MIDDLE OF THE SPILLWAY AND DIRECTLY IN CONTACT WITH WATERS OF THE NORTH FORK OF MILL CREEK AFTER SIGNIFICANT RAINFALL EVENTS.

21. TWELVE STAGED DRUMS ARE LOCATED NEAR THE MAINTENANCE BUILDING AND TWO DRUMS ARE LOCATED IN THE STORAGE SHED. A COMPOSITE SAMPLE OF SOLID WASTE (A WASTE CHARACTERIZATION FOR DISPOSAL) IDENTIFIED THE FOLLOWING HAZARDOUS SUBSTANCES (I.E.- CONTAMINANTS) IN THE DRUMS NEAR THE MAINTENANCE BUILDING: 1) ACETONE (5.2 PPM); 2) BENZENE (100 PPM); 3) TOLUENE (1.9 PPM); 4) PHENOL (360 PPM); AND 5) CHROMIUM (23 PPM). A COMPOSITE SAMPLE OF LIQUID WASTES IN DRUMS IN THE ABOVE LOCATION YIELDED: 1) NAPHTHALENE (500 PPM); 2) TENTATIVELY IDENTIFIED HYDROCARBONS (35,900 PPM); 3) ETHYLMETHYL BENZENE ISOMER (7,000 PPM); 4) TENTATIVELY IDENTIFIED AROMATICS (9,200 PPM); 5) (1-METHYLPROPYL)- CYCLOHEXANE (4,500 PPM); 6) METHYLPROPYL BENZENE ISOMER (4,200 PPM); 7) METHYL-METHYLETHYL BENZENE ISOMER (7,000 PPM); 8) TETRAMETHYL BENZENE ISOMER (3,400 PPM); 9) UNDECANE (22,000 PPM); 10) CHROMIUM (214 PPM); 11) COPPER (35,700 PPM); 12) ARSENIC (37 PPM); 13) LEAD (544 PPM); 14) MANGANESE (5,197 PPM); 15) NICKEL (3,429 PPM); 16) SELENIUM (64 PPM); AND 17) ZINC (755 PPM). BASED ON THE ABOVE ANALYSES, THESE MATERIALS IF LEFT ON-SITE, POSE A THREAT TO PUBLIC HEALTH DUE TO POTENTIAL EXPOSURE FROM DERMAL CONTACT, INCIDENTAL INGESTION, OR INHALATION. ALSO, THE POTENTIAL EXISTS FOR THESE CONTAMINANTS TO ADVERSELY AFFECT THE ENVIRONMENT. CONTAMINANTS MAY MIGRATE INTO THE GROUNDWATER OR SURFACE WATERS IF ANY OF THE DRUMS DEVELOP LEAKS. ALSO, IF THESE DRUMS WERE TO RUPTURE AND RELEASE THE PRESENTLY CONTAINED WASTES TO THE ENVIRONMENT, THE POTENTIAL FOR SIGNIFICANT HEALTH RISKS TO WORKERS AND THE ENVIRONMENT WOULD RESULT. THESE WASTES CONTAIN VARIOUS CARCINOGENIC CHEMICALS SUCH AS BENZENE, PAHS, CHROMIUM, LEAD, NICKEL, AND ARSENIC.
22. CONTINUED EROSION BY THE NORTH FORK OF MILL CREEK, ADJACENT TO THE CULVERTS IN THE SPILLWAY, INCREASES THE PROBABILITY THAT ADDITIONAL COAL-TAR WASTES MAY BE EXPOSED. WASTES IN THIS AREA LIKELY POSE A POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT DUE TO DERMAL EXPOSURE OR INHALATION. IT WILL BE NECESSARY TO RECONSTRUCT THE SPILLWAY TO PREVENT FURTHER EXPOSURE OF COAL-TAR WASTES.
23. PRIMARY SITE WASTE/DEBRIS PILES CONTAIN VARIABLE QUANTITIES OF POTENTIALLY HAZARDOUS MATERIALS: A) ACM; B) TAR-CUBES; C) CRUSHED DRUMS (CONTENTS UNKNOWN); AND D) TRANSFORMER MATERIALS.
  - A. THE ACM, AS PREVIOUSLY DESCRIBED, IS OF CONCERN.
  - B. THE TAR-CUBES ARE DERIVATIVES OF THE COAL-TARS GENERATED AT THE PRIMARY SITE. DUE TO WASTE CHARACTERIZATION FOR DISPOSAL ANALYSES HAVING EXTREMELY HIGH DETECTION LIMITS AND HIGH LEVELS OF ORGANIC CARBON CAUSING MATRIX INTERFERENCE, PAH COMPOUNDS WERE NOT DEFINITELY IDENTIFIED. HOWEVER, A CUMULATIVE TOTAL OF 10 TENTATIVELY IDENTIFIED COMPOUNDS (TICS) YIELDED 920 PPM. IT IS LIKELY THAT THESE TICS ARE PAH COMPOUNDS. ALTHOUGH THE TAR-CUBES APPEAR TO VARY IN COMPOSITION FROM THE RAW COAL-TAR WASTES, THE CUBES POSE A POTENTIAL RISK SINCE THEY ARE COMPOSED OF PURE COAL-TAR WHICH IS PRIMARILY PAH CONSTITUENTS. ON THE 7/26/91 SITE TOUR WITH REPRESENTATIVES FROM THE STATE OF TENNESSEE, IT WAS NOTED THAT MELTED TAR FROM CUBES WAS OOOZING FROM THE BASE OF SEVERAL WASTE PILES ADJACENT TO THE RAW LIQUOR STORAGE TANK FOUNDATION. THESE MATERIALS LIKELY POSE A POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT SINCE CONTAMINANTS ARE MOBILIZED IN SUMMER AND COULD POTENTIALLY BE TRANSPORTED BY SURFACE WATERS TO THE NORTH FORK OF MILL CREEK.
  - C. CRUSHED DRUMS POSE A POTENTIAL THREAT AT THE PRIMARY SITE IF FOUND TO CONTAIN HAZARDOUS COMPOUNDS.



D. AT PRESENT, LITTLE IS KNOWN ABOUT THE VARIETY OF SMALL TRANSFORMERS FOUND AT THE PRIMARY SITE. ON 4/26/91 SEVERAL WERE SAMPLED, HOWEVER, WASTE CHARACTERIZATION DATA MINIMUM DETECTION LIMITS WERE TOO HIGH TO DETECT ANY COMPOUNDS. THESE TRANSFORMERS MAY CONTAIN HAZARDOUS MATERIALS AND MAY POSE A POTENTIAL THREAT AT THE WRIGLEY SITE SINCE THEY ARE SCATTERED THROUGHOUT THE PRIMARY SITE AND READILY ACCESSIBLE TO ANYONE THAT MAY CONTACT THEM.

11. THE IRRIGATION FIELDS' ABANDONED LAGOON WAS FOUND TO CONTAIN THE FOLLOWING CONTAMINANTS IN SEDIMENTS DOWN TO APPROXIMATELY THREE FEET: 1) PHENOL (13 PPB); 2) TOLUENE (11 PPB); 3) METHYLENE CHLORIDE (120 PPB); 4) TETRACHLORO-ETHENE (5 PPB); 5) LEAD (91 PPM); 6) ARSENIC (31 PPM); AND 7) COPPER (1,200 PPM). THESE LEVELS OF CONTAMINANTS ARE NOT PRESENTLY OF CONCERN. HOWEVER, AERIAL PHOTOS TAKEN BETWEEN 1958 AND 1963 SHOW SIMILARITIES BETWEEN THE IRRIGATION FIELDS' LAGOON AND THE STORAGE BASIN WHERE HIGH LEVELS OF CONTAMINANTS WERE IDENTIFIED. SIMILARITIES BETWEEN THESE TWO AREAS ARE: 1) SIZE AND SHAPE OF CONTAINMENT AREA; 2) SEGREGATION OF SUSPENDED PARTICULATES (IN BASIN AND LAGOON WATERS) AWAY FROM THE FEED PIPE OUTFLOW AS NOTED IN THE EPIC PHOTOS; AND 3) HISTORICAL INFORMATION THAT DESCRIBES SIMILAR WASTEWATER DISPOSAL ACTIVITIES AT BOTH LOCATIONS. BASED ON THIS INFORMATION, THE DEEPER SEDIMENTS AT THE IRRIGATION FIELDS' ABANDONED LAGOON MAY POSE A POTENTIAL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT.
12. SITE ACCESS CONTROLS AT THE PRIMARY SITE AND STORAGE BASIN WILL REDUCE THE RISKS ASSOCIATED WITH DERMAL CONTACT OR OTHER EXPOSURES TO TRESPASSERS.
13. ELEVEN SURFACE AND SUBSURFACE SOIL COMPOSITE SAMPLES WERE OBTAINED AT THE ATHLETIC FIELD (INSIDE THE OUTFIELD FENCE) IN DECEMBER OF 1990. ALTHOUGH HAZARDOUS SUBSTANCES WERE FOUND, THESE WERE ALL BELOW LEVELS OF CONCERN. HOWEVER, RISKS MAY BE ELEVATED BEHIND THE ATHLETIC FIELDS' OUTFIELD FENCE. ONE SOIL SAMPLE OUT OF 6 SAMPLES OBTAINED DURING THE RI AT THIS LOCATION REVEALED: 1) LEAD (1,000 PPM); 2) COPPER (69,000 PPM); 3) MANGANESE (3,100 PPM); 4) ZINC (42,000 PPM); 5) COBALT (81 PPM); 6) CHROMIUM (56 PPM); 7) BARIUM (640); AND 8) ALUMINUM (9,400 PPM). THEREFORE, EPA HAS DETERMINED THAT CONFIRMATORY SAMPLING AND ANALYSES ARE JUSTIFIED AT THIS LOCATION TO DETERMINE THE EXTENT AND ASSOCIATED RISKS OF THIS "HOT SPOT".

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION SELECTED IN THIS ROD, MAY PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT. THESE EARLY FINAL AND INTERIM ACTIONS ARE NECESSARY TO ACHIEVE SIGNIFICANT RISK REDUCTION WHILE DEVELOPING A FINAL REMEDIAL SOLUTION FOR THE WRIGLEY CHARCOAL SITE.

#### #SA

#### SUMMARY OF ALTERNATIVES

##### ALTERNATIVE 1: NO ACTION

- CERCLA REQUIRES THAT THE "NO ACTION" ALTERNATIVE BE CONSIDERED AT EVERY SITE. THIS ALTERNATIVE MUST BE CONSIDERED TO SERVE AS A BASIS FOR COMPARISON OF OTHER ALTERNATIVES. UNDER THIS ALTERNATIVE, NO SLUDGE, SOIL, SEDIMENT, GROUNDWATER, OR DEBRIS CLEANUP, CONSOLIDATION OR TREATMENT WOULD TAKE PLACE. THE ONLY REDUCTION OF CONTAMINANT LEVELS WOULD OCCUR VIA NATURAL PROCESSES SUCH AS DISPERSION OR ATTENUATION. THE ONLY COSTS ASSOCIATED WITH THE ALTERNATIVE PERTAIN TO INSTITUTIONAL CONTROLS AND FEES.

PRESENT WORTH (PW) COST:	\$36,000
PW CAPITAL COST:	\$30,000
TIME TO IMPLEMENT:	1 MONTH

#### ALTERNATIVE 2: LIMITED ACTION

- DEED RESTRICTIONS AND SITE ACCESS RESTRICTIONS (INSTITUTIONAL CONTROLS) INCLUDING: A 10-FOOT HIGH CHAIN-LINK FENCE TOPPED WITH BARBED WIRE WILL BE INSTALLED AROUND THE PRIMARY SITE AND THE STORAGE BASIN INCLUDING THE OVERFLOW BASIN. PRIOR TO INSTALLATION, THE AREAS OF FENCING WILL BE CLEARED FOR ACCESS AS REQUIRED FOR PROPER INSTALLATION. THE FENCE WOULD BE EQUIPPED WITH A GATE FOR CONTROLLED ACCESS.
- WARNING SIGNS AND PLACARDS WOULD BE ADDED AND POSTED AT 100-FOOT INTERVALS ALONG THE FENCE. THE AREAS TO BE FENCED ARE AS FOLLOWS: 1) PRIMARY SITE (6,280 FEET), AND 2) STORAGE BASIN (1,230 FEET - INCLUDING THE OVERFLOW BASIN). THE TOTAL AMOUNT OF FENCING PROPOSED FOR THE TWO WRIGLEY SITE AREAS IS 7,510 LINEAR FEET.

PRESENT WORTH COST:           \$169,004  
PW CAPITAL COST:           \$146,960 (FENCING)  
TIME TO IMPLEMENT:        3 MONTHS

THIS ALTERNATIVE WILL INSURE THAT SITE ACCESS IS LIMITED THROUGH INSTALLATION OF A SECURITY FENCE WHILE ALSO ATTEMPTING TO ESTABLISH CONTROLS THAT ENSURE PROPER MAINTENANCE OF THE SITE THROUGH DEED RESTRICTIONS. THIS ALTERNATIVE DOES NOT IMPROVE RESIDUAL RISKS ABOVE BASELINE CONDITIONS NOR DOES IT REDUCE TOXICITY, MOBILITY, OR VOLUME.

#### ALTERNATIVE 3: EARLY FINAL AND INTERIM ACTION

1. METALLIC WASTES IN THE MAINTENANCE BUILDINGS' BURN-PIT WILL BE EXCAVATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED RCRA FACILITY. THIS ACTIVITY WILL BE A EARLY FINAL ACTION. THE APPROXIMATE VOLUME OF THIS MATERIAL IS 15 YD3. TRANSFORMERS FOUND IN THE MAINTENANCE BUILDING WILL BE SECURED WITH OTHER TRANSFORMERS FOUND AT THE PRIMARY SITE IN AN ON-SITE CONTAINMENT AREA FOR FUTURE ACTION. THE TOTAL AMOUNT OF TRANSFORMERS ESTIMATED AT 120 DRUMS. THIS IS AN INTERIM ACTIVITY;
2. RISKS WILL BE REDUCED AT THE STORAGE BASIN BY FENCING THE AREA. THIS WILL DISCOURAGE AND POSSIBLY PREVENT ENTRY AND DISTURBANCE OF THIS AREA UNTIL WASTES CAN BE APPROPRIATELY ELIMINATED DURING LATER REMEDIAL ACTIVITIES. INSTALLATION OF THE FENCE IS CONSIDERED TO BE AN INTERIM ACTION (OSWER DIRECTIVE 93355.3-02);
3. PROCESS TANK WASTE SLUDGES (29 YD3) WILL BE REMOVED, TRANSPORTED, INCINERATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED RCRA INCINERATOR/LANDFILL FOR DISPOSAL. THE METALLIC TANKS WILL BE DECONTAMINATED AND SOLD AS SCRAP. THIS IS A MINOR MODIFICATION FROM THE PROPOSED PLAN WHICH STATED THE TANKS WOULD BE DISPOSED OF IN AN EPA APPROVED RCRA FACILITY. ELIMINATION OF THE PROCESS TANKS AND SLUDGES IS AN EARLY FINAL ACTION;
4. BLACK COAL-TAR WASTES ON THE GROUND FROM THE PROCESS TANKS DOWN TO THE NORTH FORK OF MILL CREEK WILL BE EXCAVATED, TRANSPORTED, INCINERATED, STABILIZED AND DISPOSED OF IN AN EPA APPROVED FACILITY. THE AREA HAS BEEN VISUALLY ESTIMATED AT APPROXIMATELY 50 X 10 FEET WITH AN AVERAGE THICKNESS OF 1.0 FOOT (APPROXIMATELY 19 YD3). REMOVAL OF THIS WASTE IS CONSIDERED TO BE AN INTERIM ACTIVITY;
5. BLACK COAL-TAR WASTES AT THE NORTHEAST CORNER OF THE PREVIOUS STILL HOUSE LOCATION WILL BE EXCAVATED, TRANSPORTED, INCINERATED, STABILIZED, AND DISPOSED OF IN AN EPA APPROVED FACILITY. THE APPROXIMATE VISUAL ESTIMATE OF THE AREA IS 10 X 10 FEET. THIS SMALL AREA SHOULD BE EXCAVATED TO APPROXIMATELY A ONE-FOOT DEPTH, THEN BACKFILLED WITH CLEAN FILL. THE ESTIMATED VOLUME OF THIS MATERIAL IS 3.5 YD3. REMOVAL OF THESE WASTES IS CONSIDERED TO BE AN INTERIM ACTIVITY;

6. VISIBLY FRIABLE ACM WILL BE REMOVED, TRANSPORTED AND DISPOSED OF IN AN APPROVED ASBESTOS LANDFILL. MOST OF THE INTACT ACM ON BUILDING ROOFS APPEARS TO BE IN FAIR CONDITION. HOWEVER, THE VISIBLY FRIABLE ACM ON THE SMALL BUILDING IN FRONT OF THE MAINTENANCE BUILDING SHOULD BE REMOVED TOGETHER WITH BROKEN SHEETS OF ACM ON THE GROUND NEAR THE DRYER BUILDING, TANK BATTERY, AND PREVIOUS LOCATION OF THE STILL HOUSE (APPROXIMATELY 20 YD3 OR 0.5 TONS). VISIBLE ACM ON SOILS ASSOCIATED WITH BROKEN, CRUSHED, OR SHEET ACM THAT REVEAL LIGHT GREY-WHITE COLORATION (REPRESENTATIVE OF THE ACM AT THE WRIGLEY SITE) WILL BE REMOVED. AN ESTIMATE OF ACM CONTAMINATED SOILS THAT NEED TO BE REMOVED IS 20 YD3. REMOVAL OF THE ACM IS CONSIDERED TO BE AN INTERIM ACTIVITY;
7. EXPOSED BLACK COAL-TAR WASTE VISIBLE IN THE SPILLWAY SHOULD BE EXCAVATED, TRANSPORTED, INCINERATED, STABILIZED AND DISPOSED OF IN AN APPROVED OFF-SITE FACILITY. WASTES SHOULD ONLY BE EXCAVATED UNTIL A REASONABLE MARGIN (FOR CONSTRUCTION PURPOSES) IS ESTABLISHED FOR THE REBUILT SPILLWAY. APPROXIMATE ESTIMATES FOR THIS WASTE ARE 100 YD3. THIS IS CONSIDERED TO BE AN INTERIM ACTIVITY;
8. TWELVE DRUMS ARE LOCATED NEAR THE MAINTENANCE BUILDING AND TWO DRUMS IN THE STORAGE SHED. DRUMMED WASTES SHOULD BE TRANSPORTED, INCINERATED, STABILIZED, AND DISPOSED OF IN AN EPA APPROVED FACILITY. THIS IS A MODIFICATION FROM THE PROPOSED PLAN AND IS CONSIDERED TO BE AN EARLY FINAL ACTION;
9. THE SPILLWAY SHOULD BE REPAIRED AND RE-ENGINEERED TO ACCOMMODATE THE SIGNIFICANT FLOOD WATERS THAT FREQUENT THIS AREA. THIS MAY INVOLVE STRAIGHTENING AND FURTHER EXCAVATING THE SPILLWAY DOWN TO THE EXISTING CREEK GRADE (ADDITIONAL INFORMATION CONCERNING THE SPILLWAY IS PRESENTED ON P. 47). THIS IS CONSIDERED TO BE AN INTERIM ACTIVITY;
10. SITE SURFACE WASTE/DEBRIS PILES THAT INCLUDE TAR-CUBES, PIECES OF ACM, TRANSFORMER MATERIALS, CRUSHED DRUMS, AND OTHER MISCELLANEOUS METALLIC DEBRIS AND TAR WASTE WILL BE SORTED. PIECES OF ACM WILL BE REMOVED AND DISPOSED OF WITH THE ACM AS PREVIOUSLY DESCRIBED IN ITEM 6. METALLIC SCRAP WOULD BE TRANSPORTED AND DISPOSED IN AN APPROVED EPA FACILITY. MATERIALS SUCH AS TAR-CUBES AND WASTES THAT MAY BE REMEDIATED WITH LATER REMEDIAL ACTIVITIES WOULD BE STORED IN AN ON-SITE CONSOLIDATION AREA. THIS IS CONSIDERED TO BE AN INTERIM ACTIVITY. VOLUME ESTIMATES FOR SITE DEBRIS ARE PRESENTED IN TABLE 1;
11. A LIMITED INVESTIGATION WILL BE PERFORMED AT THE IRRIGATION FIELDS' ABANDONED 3/4 ACRE LAGOON. THIS ACTIVITY WILL INCLUDE SEVERAL SOIL BORINGS/EXCAVATIONS (TO APPROXIMATELY 10 FEET) AND SEVERAL ADDITIONAL SOIL SAMPLES AT THE PREVIOUS LOCATION OF THE FEED PIPE OUTFLOW. THIS ACTIVITY WILL DETERMINE WHETHER WASTES SIMILAR TO THOSE AT THE STORAGE BASIN ARE PRESENT IN THE DEEPER SOILS. THIS IS A MODIFICATION FROM THE PROPOSED PLAN AND CONSIDERED TO BE AN INTERIM ACTIVITY;
12. EPA WILL NEGOTIATE WITH LOCAL MUNICIPALITIES TO IMPOSE DEED RESTRICTIONS AT THE PRIMARY SITE AND STORAGE BASIN. SITE ACCESS CONTROLS WILL BE IMPLEMENTED (FENCING & PLACARDS) AT THE PRIMARY SITE AND STORAGE BASIN. THIS IS AN INTERIM ACTIVITY;
13. SAMPLING AND ANALYSES:
  - RESAMPLING AND ANALYSES OF SIX MONITORING WELLS AND TWELVE PIEZOMETERS AT THE PRIMARY SITE WILL PROVIDE AN ASSESSMENT OF THE GROUNDWATER QUALITY;
  - SOIL SAMPLING AND ANALYSES WILL BE REQUIRED BEHIND THE ATHLETIC FIELD TO THE GARDEN AREA. THIS WILL ASSESS THE NEED ANY FUTURE ACTIVITIES IN THIS AREA;
  - FOLLOWING EPA ACTIVITIES CONCERNING THESE EARLY FINAL AND INTERIM ACTIONS, ONE ROUND OF RESIDENTIAL WELL AND SPRING SAMPLING AND ANALYSES WILL BE REQUIRED TO INSURE THESE ACTIVITIES HAVE NOT AFFECTED WATER QUALITY.

PRESENT WORTH COST:	\$984,998
PW CAPITAL COST:	\$787,810
TIME TO IMPLEMENT:	6 MONTHS

AT THE END OF THE FIVE-YEAR PERIOD FOLLOWING THIS INTERIM ACTION, A REVIEW WILL BE CONDUCTED. IF SUBSEQUENT REMEDIAL ACTIVITIES ARE INITIATED PRIOR TO THE CLOSE OF THE FIVE-YEAR PERIOD FOLLOWING INTERIM ACTION, A REVIEW WILL BE CONDUCTED PRIOR TO ANY INITIATION OF ADDITIONAL WORK AT THE WRIGLEY CHARCOAL SITE. THE REVIEW WILL BE CONDUCTED TO INSURE THAT EARLY FINAL ACTIVITIES ARE FUNCTIONING AS DESIGNED AND THAT THE INTERIM ACTIVITIES ARE, AND HAVE BEEN EFFECTIVE IN REDUCING THE THREAT TO HUMAN HEALTH AND THE ENVIRONMENT.

THIS ALTERNATIVE INCLUDES THE INSTITUTIONAL CONTROLS PREVIOUSLY DESCRIBED AND ALSO REDUCES THE RISKS ASSOCIATED WITH VARIOUS CONTAMINANTS AT THE PRIMARY SITE. THESE EARLY FINAL AND INTERIM ACTION REMEDIAL MEASURES ARE DESIGNED TO REDUCE AND ELIMINATE SOME OF THE MOST IMMINENT AND SUBSTANTIAL DANGERS THAT RESIDE AT THE PRIMARY SITE AND REDUCE RISKS ASSOCIATED WITH DERMAL CONTACT AT THE STORAGE BASIN THROUGH ACCESS RESTRICTIONS.

A BREAKDOWN OF ESTIMATED VOLUMES OF ON-SITE MATERIALS AND THE REMOVAL/DISPOSAL COSTS ARE PRESENTED IN TABLE 1.

THIS ALTERNATIVE RETAINS THE INSTITUTIONAL CONTROLS DISCUSSED FOR ALTERNATIVE 2 AND ADDS ADDITIONAL REMEDIAL MEASURES THAT ARE DESIGNED TO REDUCE RISKS ASSOCIATED WITH SOME OF THE MOST IMMINENT AND SUBSTANTIAL DANGERS THAT RESIDE AT THE PRIMARY SITE. RISK REDUCTION AT THE STORAGE BASIN CONSISTS MAINLY OF ACCESS RESTRICTIONS. THE EFFORTS INCLUDED IN THIS ACTION SPECIFICALLY FOR THE PRIMARY SITE WILL ACHIEVE SIGNIFICANT RISK REDUCTION EARLY IN THE SUPERFUND PROCESS.

#### **#SCAA**

#### **SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES**

THIS SECTION PROVIDES THE BASIS FOR DETERMINING WHICH ALTERNATIVE 1) MEETS THE THRESHOLD CRITERIA FOR OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT AND COMPLIANCE WITH ARARS, 2) PROVIDES THE "BEST BALANCE" BETWEEN EFFECTIVENESS AND REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT, IMPLEMENTABILITY, AND COST, AND 3) DEMONSTRATES STATE AND COMMUNITY ACCEPTANCE. A GLOSSARY OF THE EVALUATION CRITERIA IS PROVIDED IN TABLE 2.

#### **OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT**

THE ONLY ALTERNATIVE THAT WOULD SUFFICIENTLY BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT WOULD BE ALTERNATIVE 3. ALTERNATIVES 1 AND 2 ARE NOT PROTECTIVE BECAUSE THEY DO NOT ADDRESS THE MOST SIGNIFICANT THREATS TO HUMAN HEALTH AND THE ENVIRONMENT AT THE WRIGLEY CHARCOAL PRIMARY SITE OR STORAGE BASIN. THEREFORE, THE "NO ACTION" ALTERNATIVE AND ALTERNATIVE 2 WILL NOT BE CONSIDERED FURTHER IN THIS ANALYSIS AS OPTIONS FOR THE SITE. ALTERNATIVE 3 IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT SINCE REDUCES OR CONTROLS SIGNIFICANT, IMMEDIATE, AND POTENTIAL THREATS FROM DIRECT EXPOSURE TO HAZARDOUS CONTAMINANTS AT THE WRIGLEY CHARCOAL SITE. INSTITUTIONAL CONTROLS WILL LIMIT ACCESS TO THE PRIMARY SITE AND THE STORAGE BASIN WHICH WILL REDUCE RISKS ASSOCIATED WITH THESE CONTAMINATED AREAS. THIS ALTERNATIVE ALSO PROVIDES THE BASIS FOR FUTURE ACTIONS.

#### **COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**

ALTERNATIVE 3 MEETS ARARS AS APPLICABLE TO EXCAVATION, TRANSPORTATION, TREATMENT, STABILIZATION AND DISPOSAL OF CONTAMINATED MEDIA SUCH AS COAL-TAR WASTE AND SLUDGE.

FOR MATERIALS SUCH AS TAR-CUBES, TRANSFORMERS AND NON-CORRODED METALLIC MATERIAL THAT MAY POSE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT, THESE WASTES WILL BE STORED IN AN ON-SITE CONSOLIDATION AREA. THE STORAGE OF THESE WASTES AT THE WRIGLEY SITE IS OCCURRING BECAUSE REMEDIATION FOR THESE MATERIALS WILL BE INVESTIGATED AND ACCOMPLISHED AS PART OF LATER REMEDIAL ACTIVITIES.

WASTES SUCH AS TAR-CUBES WILL BE MOVED WITHIN THE AREA OF CONTAMINATION AND WILL NOT INVOKE THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) LAND DISPOSAL RESTRICTIONS (LDRS). HOWEVER, CONSOLIDATION (I.E. - STORAGE) OF THESE MATERIALS ON-SITE WILL REQUIRE THAT THE RCRA STORAGE ARARS BE WAIVED (SEE SECTION 9.2).

RCRA SUBTITLE C REQUIREMENTS ARE APPLICABLE WHEN EXCAVATING AND TRANSPORTING THE SOIL. SAFETY PRECAUTIONS SPECIFIED IN RCRA MUST BE FOLLOWED WHICH INCLUDE STANDARDS AND REQUIREMENTS FOR OWNERS AND OPERATORS OF TREATMENT, STORAGE, AND DISPOSAL (TSD) FACILITIES.

A LIST OF MAJOR ARARS THAT PERTAIN TO THE WRIGLEY CHARCOAL SITE INTERIM AND EARLY FINAL ACTIONS IS PRESENTED BELOW WHILE A MORE THOROUGH DESCRIPTION AND EXPLANATION OF MAJOR ARARS IS PRESENTED IN APPENDIX E.

#### ACTION SPECIFIC ARARS

- RCRA SUBTITLE C: 40 CFR 260.1, 40 CFR PART 262, 40 CFR PART 462, 40 CFR PART 262, 40 CFR 264, 40 CFR PART 265.
- STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE: 40 CFR PART 263.
- STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES (TSDFS): 40 CFR PART 264.
- DOT RULES FOR HAZARDOUS MATERIALS TRANSPORT: 40 CFR PART 107, 40 CFR PART 171-179.

#### LOCATION SPECIFIC ARARS

- FEDERAL PROTECTION OF WETLANDS EXECUTIVE ORDER: E.O. 11990, 40 CFR PART 6, APPENDIX C.
- CLEAN WATER ACT (CWA): 40 CFR PART 230, 33 CFR PARTS 320-330.
- THE FISH AND WILDLIFE COORDINATION ACT: 16 USC 661, SECTION 404.
- THE FISH AND WILDLIFE IMPROVEMENT ACT OF 1978: 16 USC 742A, AND THE FISH AND WILDLIFE CONSERVATION ACT OF 1980: 16 USC 2901.
- RCRA LOCATION STANDARDS: 40 CFR 264.18.

#### CONTAMINANT SPECIFIC ARARS:

- REFERENCE DOSE (RFD): AS DEFINED BY IRIS (EPA INTEGRATED RISK INFORMATION SYSTEM). TBCS FOR THIS INTERIM ACTION.
- CARCINOGENIC POTENCY FACTORS (CPFS): TBCS FOR THIS INTERIM ACTION.
- EPA HEALTH ADVISORIES: TBCS FOR THIS INTERIM ACTION.
- CLEAN AIR ACT (CAA): NATIONAL AMBIENT AIR QUALITY STANDARDS (NESHAPS) 40 CFR PART 50, NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) 40 CFR PART 61, NEW SOURCE PERFORMANCE STANDARDS (NSPS) 40 CFR PART 60. THESE ARE TBCS FOR THE WRIGLEY INTERIM ACTION.
- CLEAN AIR ACT (CAA): NESHAP STANDARDS 40 CFR PART 61 SUBPART M PERTAINS TO ANY RENOVATION OR DEMOLITION ACTIVITIES CONCERNING ASBESTOS AT THE WRIGLEY SITE. THIS MAY PERTAIN TO REMOVAL OF ACM FROM THE SMALL BUILDING ADJACENT TO THE MAINTENANCE BUILDING. THESE ARE TBCS FOR THE WRIGLEY INTERIM ACTION.

EPA WILL ATTEMPT TO MEET "BEST DEMONSTRATED AVAILABLE TECHNOLOGY (BDAT) REQUIREMENTS (AS DESCRIBED IN RCRA LDR GUIDANCE, 9347.3-06FS, 9/90) FOR COAL-TAR WASTES AND BURN-PIT WASTES AT THE WRIGLEY CHARCOAL SITE. IF DURING REMEDIAL DESIGN, THESE REQUIREMENTS CAN NOT BE ATTAINED, EPA WILL OBTAIN A TREATABILITY VARIANCE, AND WILL ATTEMPT TO MEET THE TREATABILITY VARIANCE LEVELS. TABLE 3 PRESENTS CLEANUP CRITERIA FOR THE BDAT, AND TREATABILITY VARIANCE LEVELS.

THE FINAL CLEANUP LEVELS FOR THE INTERIM ACTIVITIES ARE NOT ADDRESSED IN THIS ROD BECAUSE SUCH GOALS ARE BEYOND THE LIMITED SCOPE OF THIS ACTION. THE FINAL CLEANUP LEVELS FOR INTERIM ACTIVITIES WILL BE ADDRESSED BY THE FINAL REMEDIAL ACTION ROD FOR THE SITE.

#### CERCLA WAIVER CRITERIA FOR ARARS

CERCLA SECTION 121(D) PROVIDES THAT UNDER CERTAIN CIRCUMSTANCES AN OTHERWISE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT MAY BE WAIVED. THESE WAIVERS APPLY ONLY TO MEETING ARARS WITH RESPECT TO REMEDIAL ACTIONS ON-SITE; OTHER STATUTORY REQUIREMENTS, SUCH AS THAT REMEDIES MUST BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, CANNOT BE WAIVED.

#### 1. INTERIM MEASURES

THE REMEDIAL ACTION SELECTED IS ONLY PART OF A TOTAL REMEDIAL ACTION THAT WILL ATTAIN SUCH LEVEL OR STANDARD OF CONTROL WHEN COMPLETED. (CERCLA SECTION 121 (D)(4)(A).)

2. UNDER MEASURES SET FORTH BY THE INTERIM WAIVER, THE RCRA SUBTITLE C, 40 CFR PART 264 ARARS PERTAINING TO PERMANENT STORAGE FACILITIES WILL BE WAIVED. PURSUANT TO THE REMEDIAL ACTION SELECTED, THE TAR-CUBES AND METALLIC MATERIALS WILL BE MOVED TO THE TEMPORARY CONSOLIDATION AREA FOR FUTURE REMEDIATION. METALLIC DEBRIS WILL ONLY BE STORED IN THE ON-SITE CONSOLIDATION AREA IF OFF-SITE DISPOSAL IS NOT SELECTED DURING THE RD. THESE MATERIALS WILL BE CONSOLIDATED WITHIN THE AREA OF CONTAMINATION (AOC), WASTES AND MATERIALS SUCH AS TAR-CUBES WERE GENERATED PRIOR TO 1980, AND WASTES ARE NOT RCRA LISTED WASTES. THE FINAL ACTION WILL BE IN COMPLIANCE WITH ALL ARARS.

#### LONG-TERM EFFECTIVENESS

EXCAVATION, TRANSPORTATION, INCINERATION, STABILIZATION, AND DISPOSAL FOR COAL-TAR WASTES AND SLUDGES WILL ACHIEVE SIGNIFICANT REDUCTION IN THE CONTAMINATION AND PROVIDE LONG-TERM EFFECTIVENESS AT THE PROCESS TANKS. ALSO, EXCAVATION, TRANSPORTATION, STABILIZATION, AND DISPOSAL OF BURN-PIT WASTES WILL PROVIDE LONG-TERM EFFECTIVENESS AT THE BURN-PIT. HOWEVER, ALL THE INTERIM MEASURES WILL NOT PROVIDE ANY DEGREE OF LONG TERM EFFECTIVENESS AT THE WRIGLEY SITE. THE EPA WILL CONTINUE TO EVALUATE LONG-TERM EFFECTIVENESS AND PERMANENCE AS PART OF THE DEVELOPMENT OF THE FINAL ACTION FOR THE SITE.

#### REDUCTION OF TOXICITY, MOBILITY OR VOLUME

ALTERNATIVE 3 DOES REDUCE TOXICITY, MOBILITY, AND VOLUME OF PREVIOUSLY DESCRIBED WASTES AT THE PRIMARY SITE. ALSO, AS THESE WASTES ARE REMOVED, ELIMINATED, OR CONTAINED THE POTENTIAL FOR DERMAL CONTACT, MIGRATION, OR BIOACCUMULATION IS GREATLY REDUCED. PROPOSED ACTIVITIES FOR THIS INTERIM ACTION ARE INTENDED TO REDUCE PRESENT RISKS ASSOCIATED WITH THE MOST IMMINENT AND SUBSTANTIAL DANGERS TO HUMAN HEALTH AND THE ENVIRONMENT WHILE PREPARING SEVERAL OF THE SITE WASTE LOCATIONS FOR FUTURE REMEDIAL ACTIVITIES THAT WILL ELIMINATE THE WASTES.

## SHORT-TERM EFFECTIVENESS

SIGNIFICANT SHORT-TERM EFFECTIVENESS WILL RESULT OF THE PREVIOUSLY MENTIONED ACTIVITIES. THE INTERIM ACTION IS EFFECTIVE IN THE SHORT-TERM BECAUSE IT WOULD SIGNIFICANTLY REDUCE THE POTENTIAL THREATS FROM CONTAMINANTS AT ALL OF THE ACTIVITY LOCATIONS PREVIOUSLY DESCRIBED. NO ADVERSE AFFECTS ARE EXPECTED DURING INTERIM REMEDIAL ACTIVITIES THAT COULD IMPACT HUMAN HEALTH OR THE ENVIRONMENT. ANY SHORT-TERM RISK TO WORKERS INVOLVED IN EXCAVATION, TRANSPORTATION OR CONSTRUCTION ACTIVITIES WOULD BE REDUCED THROUGH IMPLEMENTATION OF A HEALTH AND SAFETY PLAN. SHORT-TERM RISKS WILL BE SLIGHTLY ELEVATED DURING EXCAVATION OF THE SPILLWAY, HOWEVER, THIS AREA WILL BE FURTHER ISOLATED FROM THE WATERS OF THE NORTH FORK OF MILL CREEK UNTIL EXCAVATION AND CONSTRUCTION ACTIVITIES ARE COMPLETED. PROTECTIVE MEASURES OUTLINED IN A HEALTH AND SAFETY PLAN WILL INSURE IMPACTS FROM THESE ACTIVITIES ARE MINIMIZED.

## IMPLEMENTABILITY

THE IMPLEMENTABILITY OF AN ALTERNATIVE IS BASED ON TECHNICAL FEASIBILITY, ADMINISTRATIVE FEASIBILITY AND AVAILABILITY OF SERVICES AND MATERIALS. THERE ARE NO EXPECTED DIFFICULTIES ASSOCIATED WITH THE IMPLEMENTATION OF ALTERNATIVE 3 SINCE ONLY STANDARD CONSTRUCTION TECHNIQUES WILL BE UTILIZED.

## COST

ALTERNATIVE 3 HAS A PRESENT WORTH COST OF \$984,998. ADDITIONAL AREAS OF CONTAMINATION THAT ARE NOT ADDRESSED DURING THIS INTERIM ACTION ARE PROPOSED FOR LATER REMEDIAL ACTIVITIES AND THE COSTS OF THESE ACTIVITIES WILL BE DETERMINED AFTER ADDITIONAL INFORMATION IS OBTAINED.

## STATE ACCEPTANCE

THE STATE OF TENNESSEE HAS ASSISTED EPA IN THE REVIEW OF REPORTS AND SITE EVALUATIONS CONCERNING THE INTERIM ACTION ACTIVITIES. THE STATE HAS REVIEWED THE RECORD OF DECISION AND CONCURS WITH THE SELECTION OF THESE EARLY FINAL AND INTERIM ACTIONS.

## COMMUNITY ACCEPTANCE

COMMUNITY RESPONSE TO THE ALTERNATIVES IS PRESENTED IN THE RESPONSIVENESS SUMMARY (SECTION 12) WHICH ADDRESSES COMMENTS RECEIVED DURING THE PUBLIC MEETING AND THE PUBLIC COMMENT PERIOD.

## #SR

### SELECTED REMEDY

BASED UPON CONSIDERATION OF THE REQUIREMENTS OF CERCLA, THE DETAILED ANALYSIS OF THE ALTERNATIVE, AND PUBLIC COMMENTS, EPA HAS DETERMINED THAT THE ACTIVITIES AS DESCRIBED IN ALTERNATIVE 3 (SECTION 8.3, P. 34) CONSTITUTE AN APPROPRIATE EARLY FINAL AND INTERIM ACTION UNTIL A FINAL ACTION FOR THE SITE IS DETERMINED. THE MAJOR GOAL OF THIS INTERIM ACTION IS TO REDUCE RISKS AT THE PRIMARY SITE BY ELIMINATING, OR CONTROLLING THE MOST IMMINENT AND SUBSTANTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT. ADDITIONAL GOALS OF THIS ACTION ARE TO REDUCE THE RISK OF DERMAL CONTACT WITH WASTES AT THE STORAGE BASIN RESTRICTING ACCESS THROUGH FENCING, AND TO PERFORM ADDITIONAL SAMPLING AND ANALYSES BEHIND THE ATHLETIC FIELD TO BETTER DEFINE A SMALL "HOT SPOT", AND AT THE IRRIGATION FIELD TO DETERMINE IF COMPOUNDS OF CONCERN ARE PRESENT IN THE DEEPER SOILS OF THE ABANDONED IRRIGATION FIELD LAGOON.

IT SHOULD BE NOTED THAT SOME OF THE ACTIONS MAY BE MODIFIED DURING THE RD/RA. THESE CHANGES MAY REFLECT MODIFICATIONS RESULTING FROM THE ENGINEERING DESIGN PROCESS.

#SR

## STATUTORY REQUIREMENTS

THE US EPA AND TDEC BELIEVE THAT THE ACTIVITIES INCLUDED IN THE INTERIM ACTION SATISFY THE STATUTORY REQUIREMENTS OF PROVIDING PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAIN ARARS DIRECTLY ASSOCIATED WITH THIS ACTION AND WILL BE COST-EFFECTIVE. SECTIONS 11.1 THRU 11.6 SUMMARIZE THE STATUTORY REQUIREMENTS FOR THE SITE.

### PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE ACTIVITIES PREVIOUSLY DESCRIBED CONCERNING THIS INTERIM ACTION WILL PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY REMOVING, TREATING, AND DISPOSING OF COAL-TAR WASTES AND SLUDGES, AND BURN-PIT WASTES THAT CONTAIN SIGNIFICANT LEVELS OF CONTAMINANTS. ADDITIONAL PROTECTIVENESS IS PROVIDED BY THE REMOVAL AND DISPOSAL OF THE ACM, AND DRUMMED WASTES, AND THROUGH SITE ACCESS AND DEED RESTRICTIONS. IMPLEMENTATION OF THE INTERIM ACTION ACTIVITIES WILL NOT POSE UNACCEPTABLE SHORT-TERM RISKS OR CROSS MEDIA IMPACTS.

### ATTAINMENT OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

THE FINAL CLEANUP LEVELS FOR THE SITE AREAS WHERE INTERIM ACTIVITIES ARE PLANNED ARE NOT ADDRESSED IN THIS ROD BECAUSE SUCH GOALS ARE BEYOND THE LIMITED SCOPE OF THIS ACTION. THE FINAL CLEANUP LEVELS WILL BE ADDRESSED BY THE FINAL REMEDIAL ACTION ROD FOR THE SITE WHICH TAKES INTO ACCOUNT THE POTENTIAL MIGRATION OF SUBSURFACE CONTAMINANTS TO GROUNDWATER. ARARS FOR SITE AREAS THAT WILL BE ADDRESSED WILL BE MET AS PREVIOUSLY DISCUSSED IN SECTION 9.2 AND APPENDIX E.

### COST EFFECTIVENESS

THIS EARLY FINAL AND INTERIM ACTION REMEDY EMPLOYS PROVEN TECHNOLOGIES THAT WILL BE APPLIED TO COAL-TAR WASTES, BURN-PIT WASTES, AND DRUMMED WASTES.

THE SELECTED REMEDY AFFORDS OVERALL EFFECTIVENESS PROPORTIONAL TO ITS COSTS. THE SELECTED REMEDY PROVIDES A SUFFICIENT MARGIN OF PROTECTION, AND IS COST EFFECTIVE WHEN THE OVERALL RELATIONSHIP BETWEEN COST AND EFFECTIVENESS IS COMPARED TO OTHER ALTERNATIVES.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGY OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE PORTIONS OF THIS ACTION ARE INTERIM AND ARE NOT INTENDED TO UTILIZE PERMANENT SOLUTIONS FOR ANY OF THE FOUR WRIGLEY CHARCOAL SITE AREAS. THE OBJECTIVES OF THIS INTERIM ACTION ARE TO REDUCE AND/OR PREVENT CURRENT OR FUTURE EXPOSURE FROM EXPOSED CONTAMINANTS AT THE PRIMARY SITE AND STORAGE BASIN THAT POSE THE MOST IMMINENT AND SUBSTANTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT. EXCAVATION, OFF-SITE TREATMENT AND DISPOSAL OF COAL-TAR AND BURN-PIT WASTES WILL ACHIEVE SOME REDUCTION IN THE CONTAMINATION AT THE PRIMARY SITE. EARLY FINAL ACTIONS FOR COAL-TAR AND BURN-PIT WASTES INTEND TO UTILIZE PERMANENT SOLUTIONS ON A VERY LIMITED BASIS FOR THE PRIMARY WRIGLEY SITE. THESE ACTIVITIES WILL ALSO SERVE TO REDUCE POTENTIAL COMPLICATIONS THESE WASTES MAY HAVE ON FUTURE REMEDIAL ACTIVITIES.

THE EPA WILL CONTINUE TO EVALUATE LONG-TERM EFFECTIVENESS AND PERMANENCE AS PART OF THE DEVELOPMENT OF THE FINAL ACTION FOR THE SITE. SUBSEQUENT ACTIONS WILL PROVIDE A FINAL RESOLUTION TO SITE CONDITIONS WHICH WILL BE CONTROLLED THROUGH THE SELECTED INTERIM ACTION. UTILIZATION OF PERMANENT SOLUTION WILL BE ADDRESSED IN THE FINAL DECISION DOCUMENT FOR THE SITE. PORTIONS OF THIS INTERIM ACTION ARE NOT DESIGNED OR EXPECTED TO BE FINAL, BUT REPRESENT THE BEST BALANCE OF TRADEOFFS AMONG ALTERNATIVES WITH RESPECT TO PERTINENT CRITERIA, GIVEN THE LIMITED SCOPE OF THIS ACTION.



## PREFERENCE FOR TREATMENT

THE CERCLA STATUTORY PREFERENCE FOR TREATMENT REQUIRES THAT WASTE TREATMENT BE THOROUGHLY EVALUATED AND IF POSSIBLE, TREATED TO REDUCE OR ELIMINATE THE THREATS FROM HAZARDOUS WASTES OR MATERIALS. THE PREFERENCE FOR TREATMENT BEYOND THE SCOPE OF THESE LIMITED ACTIONS WILL BE DISCUSSED IN SUBSEQUENT DECISION DOCUMENTS FOR THE SITE.

THIS INTERIM ACTION WILL NOT DEFINITELY ADDRESS ALL OF THE PRINCIPAL THREATS POSED BY THE SITE. ADDITIONAL THREATS AT THE WRIGLEY CHARCOAL SITE WILL BE ADDRESSED DURING SUBSEQUENT REMEDIAL ACTIVITIES. TENTATIVELY, THESE SUBSEQUENT ACTIONS HAVE BEEN DESCRIBED TO REMEDIATE THE PRIMARY SITE TAR-PITS, CONTAMINATED PRIMARY SITE SOILS, TAR-CUBES, STORAGE BASIN COAL-TAR WASTES, ANY ADDITIONAL COAL-TAR WASTES IDENTIFIED AT ANY OF THE WRIGLEY CHARCOAL SITE AREAS, ANY ACM DETERMINED TO BE FRIABLE, AND ANY GROUNDWATER PROBLEMS AT THE WRIGLEY CHARCOAL SITE.

## DOCUMENTATION OF SIGNIFICANT CHANGES

COMMENTS PERTAINING TO THE PROPOSED PLAN BY THE STATE OF TENNESSEE HAVE LEAD TO SIGNIFICANT CHANGES IN THE INTERIM ACTION SELECTED FOR THE WRIGLEY CHARCOAL SITE. THE CHANGES HAVE BEEN INCORPORATED INTO THE DISCUSSION OF THE SELECTED ALTERNATIVE (ALTERNATIVE 3) IN SECTION 8.3 OF THIS DOCUMENT. THESE SIGNIFICANT CHANGES INCLUDE:

1. REDUCTION IN THE AMOUNT OF ACM TO BE REMOVED FROM THE PRIMARY SITE;
2. MODIFICATIONS TO THE SPILLWAY RECONSTRUCTION AT THE PRIMARY SITE;
3. MODIFICATIONS TO THE REMOVAL AND/OR DISPOSAL OF WASTE/DEBRIS PILES AT THE PRIMARY SITE;
4. MODIFICATIONS TO THE ACTIVITIES TO BE PERFORMED AT THE STORAGE BASIN;
5. ADDITIONAL COAL-TAR WASTES NEAR THE STILL HOUSE FOUNDATION HAVE BEEN ADDED TO THE LIST OF INTERIM ACTION ACTIVITIES.

THE STATE OF TENNESSEE HAS INDICATED THAT THE FRIABILITY OF THE ACM HAS NOT BEEN CONSISTENTLY DETERMINED. SINCE NO ANALYSES HAVE BEEN CONDUCTED TO DETERMINE THE FRIABILITY OF THE ACM, ONLY THE VISIBLY FRIABLE/BROKEN ACM WILL BE REMOVED FROM THE PRIMARY SITE. THIS MATERIAL CONSISTS OF THE BROKEN SHEETS ON THE GROUND, SOILS ADJACENT TO THESE BROKEN SHEETS, AND THE ACM ON THE SMALL BUILDING IN FRONT OF THE MAINTENANCE BUILDING. IN THE EVENT THAT DATA SUGGESTS THERE ARE ADDITIONAL RISKS WITH THE REMAINING MATERIALS, APPROPRIATE MEASURES WILL BE TAKEN AT THAT TIME.

CONCERNING THE SPILLWAY AT THE SOUTHERN END OF THE PRIMARY SITE, THE STATE OF TENNESSEE HAS RECOMMENDED THAT THE SPILLWAY BE FURTHER EXCAVATED TO BRING IT TO THE EXISTING NORTH FORK OF MILL CREEK GRADE TO REDUCE THE THREAT OF FUTURE EROSION. THE STATE HAS ALSO RECOMMENDED THAT THE TWO 48-INCH CULVERTS BE REMOVED. IT APPEARS THAT THE EXCAVATION OF THE SPILLWAY IS MORE FEASIBLE THAN CULVERT REMOVAL AT THIS TIME. EXCAVATION OF THE SPILLWAY IS PREFERRED SINCE THE CULVERTS ARE PRESENTLY BACKING UP SEDIMENT NEAR THE TAR-PITS AND DEFLECTING WATERS OF THE NORTH FORK OF MILL CREEK AWAY FROM THE TAR-PITS AND INTO THE SPILLWAY. HOWEVER, DURING THE RD, ALL OF THE OPTIONS (INCLUDING ALL OF THE STATE OF TENNESSEE REQUESTS) PREVIOUSLY MENTIONED WILL BE CRITICALLY EVALUATED AND AN APPROPRIATE OPTION WILL BE SELECTED AND IMPLEMENTED.

THE WASTE/DEBRIS PILE REMEDIATION AT THE PRIMARY SITE WILL ALSO BE MODIFIED. INSTEAD OF REMOVING ALL OF THE TAR-CUBES AND DISPOSING OFF-SITE, THESE WASTES WILL BE STORED IN AN ON-SITE CONSOLIDATION AREA FOR ELIMINATION DURING A LATER REMEDIAL ACTIVITIES. ARARS THAT PERTAIN TO THE TREATMENT, STORAGE, AND DISPOSAL FACILITIES (RCRA SUBTITLE C, 40 CFR PART 264) ARE AN ARAR. HOWEVER, THESE MATERIALS THAT WERE GENERATED PRIOR TO 1980 WILL ONLY BE CONSOLIDATED WITHIN THE

AREA OF CONTAMINATION (AOC). BASED ON THIS INFORMATION, THESE ARARS WILL BE WAIVED FOR THIS ACTIVITY BECAUSE THE STORAGE WILL BE TEMPORARY AND DOES NOT REQUIRE MEASURES DESIGNED TO PROVIDE LONG-TERM EFFECTIVENESS AND PERMANENCE. ADDITIONALLY, ALL OTHER HAZARDOUS SUBSTANCES FOUND WITHIN THESE PILES SUCH AS PARTIALLY FULL DRUMS, AND ACM WILL BE DISPOSED OF OFF-SITE. RECYCLABLE WILL ALSO BE REMOVED. SUBSTANCES THAT ARE IDENTIFIED AS NON-HAZARDOUS SUCH AS EQUIPMENT, ETC., WILL BE MOVED INTO ONE OF THE ON-SITE BUILDINGS, OR STOCKPILED ON-SITE.

ADDITIONAL CONCERNS ABOUT THE STORAGE BASIN WERE ALSO SUBMITTED BY TENNESSEE. THEY HAVE SUGGESTED THE WASTES BE LEFT IN-SITU FOR LATER REMEDIATION INSTEAD OF STABILIZING THE WASTES AND THEREBY INCREASING THE VOLUMES OF MATERIALS TO BE ELIMINATED. EPA WILL COMPLY WITH THIS REQUEST UNTIL SUBSEQUENT REMEDIAL ACTIVITIES ARE IMPLEMENTED AT THE SITE.

ADDITIONAL COAL-TAR WASTES (APPROXIMATELY 3.5 YD3) WILL BE REMOVED FROM THE NORTHEAST CORNER OF THE OLD STILL HOUSE FOUNDATION. THIS ITEM IS BEING ADDED TO THE LIST OF INTERIM ACTION ACTIVITIES AT THE REQUEST OF THE STATE OF TENNESSEE. COAL-TAR WASTES AT THIS LOCATION ARE NOTED TO BE ABOVE SAFE LEVELS FOR CARCINOGENIC PAHS. A SMALL AREA WILL BE EXCAVATED (10 X 10 X 1 (FT)) AND BACKFILLED WITH CLEAN FILL.

CONCERNING THE PROCESS TANKS, INSTEAD OF DISPOSING OF THE TANKS IN A EPA APPROVED RCRA FACILITY, THESE TANKS WILL BE SOLD AS SCRAP METAL. THIS INFORMATION IS PRESENTED IN THIS SECTION AS A CLARIFICATION, ALTHOUGH THIS IS NOT CONSIDERED TO BE A SIGNIFICANT CHANGE.